

REPORTS

RELATING TO

DEVELOPMENT OF
SEVEN SISTERS POWER SITE
ON THE
WINNIPEG RIVER

AND

AGREEMENT FOR SUPPLY
OF POWER TO PROVINCIAL
HYDRO-ELECTRIC SYSTEM

PROVINCE OF MANITOBA

1928



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IN view of the discussion that has taken place with regard to the development of the Seven Sisters power site, it has been thought advisable in the public interest that the reports and agreement relating to same should be made available to those who may be interested in the subject. The following material is therefore presented to the public, without comment by the Government, in the hope that it may furnish the basis for an intelligent understanding of the question.

JOHN BRACKEN.

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**WATER POWERS OF THE
WINNIPEG RIVER**

Water Powers of the Winnipeg River

Compilation of material asked for by the Hon J Bracken, Premier of Manitoba, in his letter of February 6, 1928, addressed to J. T. Johnston.

NOTE

The material herein has been compiled and labelled Exhibits 1, 2, 3, etc., etc., in the same order and with the same reference numbers as the items are listed in the Hon. J. Bracken's letter of February 6, 1928, hereunder.

J. T. Johnston.

Province of Manitoba,
Office of the Premier,
Winnipeg,
6th February, 1928

Mr J. T. Johnston,
Director, Dominion Water Power and Reclamation Service,
Department of the Interior
Ottawa, Ont.

Dear Sir:

Confirming our verbal request at the conference held in my office this morning between Hon. W. R. Clubb, Dr. T. H. Hogg, Mr. C. H. Attwood, yourself and the undersigned, at which the situation obtaining on the Pinawa-Seven Sisters reach of the Winnipeg River was discussed and the relationship of the Provincial Government and the Winnipeg Electric Company thereto, were considered, I would appreciate your Department furnishing my government with the following data:

1. A key map of the Winnipeg and English River systems from Lac Seul and the Lake of the Woods in the upper river to the outlet into Lake Winnipeg, locating thereon the Manitoba-Ontario boundary, the power sites as presently developed or proposed, and indicating in connection therewith the amount of power developed or available, and the capital cost per horsepower of development.

2. A statement as to the power sites of the Winnipeg River in Manitoba, which have been disposed of to date by your department.

3. A statement of sites as to which commitment has been made by your Department, outlining the terms and basis of such commitments in each case.

4. A statement as to what would be the economical order of the development of the various sites of the Winnipeg River in Manitoba, based upon the capital and annual cost per horsepower.

5. A statement of the advantages to be derived from the closing of the Pinawa channel.

WATER POWERS OF THE WINNIPEG RIVER

6. The alternative courses which might be pursued looking to the development of the Seven Sisters reach by the Provincial Government.

7. Copies of the licenses under which existing developments are operating.

8. Copy of the contract between the Manitoba Power Company and the City of Winnipeg under which the Company is supplying power to the City of Winnipeg.

I would appreciate receiving the above material at your earliest convenience.

Yours very truly,

JOHN BRACKEN

EXHIBIT I

Water Powers of English and Winnipeg Rivers

Hereunder will be found the following material summarizing the water powers of the English and Winnipeg rivers.

1. Table I listing water powers of the English and Winnipeg rivers based upon dependable flow as regulated by Lake of the Woods and Lac Seul, and as shown on Sketch Plan No. I;

2. Sketch Plan No. I, showing the location, head and capacity of the water powers of the English and Winnipeg rivers, based upon dependable flow as regulated by Lake of the Woods and Lac Seul;

3. Table 2 listing power available in the Pinawa-Seven Sisters reach of the Winnipeg River under various assumptions as to flow and apportionment thereof, and as shown on Sketch Plan No. II.,

4. Sketch Plan No. II of the Pinawa-Seven Sisters reach of the Winnipeg River showing the power available under various assumptions as to flow and apportionment thereof.

In Table 1 the power will be found listed, first, as 24-hour power with dependable flow and, second, as what has been termed "Commercial Power," assuming a 50% overload on the 24-hour capacity. This second set of power figures is considered to be conservative as the conditions of flow and local pondage on the Winnipeg River are such as will warrant a higher turbine installation than that indicated by these figures.

In this table, as indicated by the note thereon, the flow is divided in the Pinawa-Seven Sisters reach as under present conditions and the listed powers are based upon this divided flow.

It will be noted that the total 24-hour dependable power in Manitoba is 487,700 horsepower, equivalent to 751,550 "Commercial Horsepower."

In Table 2 the water power of the Pinawa-Seven Sisters reach will be found listed under various assumptions as to storage and apportionment of flow between the two channels. The power is given in terms of 24-hour dependable horsepower. The table is entirely self-explanatory and indicates the conservation of power which will be achieved by the combination of the flow into one channel. The extent of this conservation will be elaborated in greater detail in the material appended to Exhibit 2.

J. T. JOHNSON.

Ottawa, February, 23, 1922.

TABLE 1.—WATER POWER OF THE ENGLISH AND WINNIPEG RIVERS, BASED UPON DEPENDABLE FLOW AS REGULATED BY THE LAKE OF THE WOODS AND LAO SEUL.

Site	Head in Feet	Dependable Flow cusec ft.	P O W E R		
			24-hour power with dependable flow H.P.	Commercial Power with 80% Overload H.P.	H.P. Installed in Existing Plants
English River					
Bar Falls	23	6,340	14,850	21,870	
Mason's Falls	55	8,850	33,450	57,600	
Oak Falls	25	7,110	16,500	37,300	
Kettle Falls	50	8,110	41,500	81,850	
Winnipeg River					
Outlet of Lake of Woods	22	11,000	26,700	40,050	37,170
White Dog Falls	25	11,100	30,450	42,600	
Boundary Falls	28	10,450	24,500	33,250	
Potatoe du Bois	46	20,000	94,200	141,300	108,000 (Only of Winnipeg)
Slave Falls	20	20,000	53,200	79,800	
Upper Seven Sisters	20	11,000	32,000	48,900	
Lower Seven Sisters	37	11,000	41,800	62,400	
Pineau Plant	42	8,000	38,700	58,050	37,000 (Winnipeg Electric Railway Company)
McArthur Falls	16	20,000	38,900	55,350	
Great Falls	66	30,000	114,700	175,050	112,400 (Manitoba Power Co.)
Pine Falls	37	30,000	70,800	113,700	
GRAND TOTALS			710,000	1,066,350	281,570
Totals in Ontario			223,250	334,800	57,150
Totals in Manitoba			486,750	731,550	224,420

NOTE.—In the above table the flow is divided in the Pineau-Seven Sisters Reach, 9,000 second-feet being allocated to Pineau and 11,000 second-feet to Seven Sisters. Power estimated at 80% efficiency.

TABLE 2.—WATER POWER OF THE PINAWA-SEVEN SISTERS REACH OF THE WINNIPEG RIVER, LISTING POWER AVAILABLE IN TERMS OF 24-HOUR DEPENDABLE HORSEPOWER, UNDER VARIOUS ASSUMPTIONS AS TO STORAGE AND APPORTIONMENT BETWEEN THE TWO CREEKWAYS

Flow Conditions and Apportionment	Upper Seven Sisters H.P.	Lower Seven Sisters H.P.	Pinawa Plant of Winnipeg Electric Co., H.P.	Total H.P.
Dependable H.P. with Lake of the Woods Storage alone (Pinawa Plant Operating)	22,100	20,640	38,700	81,440
Dependable H.P. with Lake of the Woods and Lac Seul Storage (Pinawa Plant Operating)	22,600	41,000	38,700	112,300
Dependable H.P. with Lake of the Woods and Lac Seul Storage (Pinawa Plant Closed)	29,400	75,700	—	135,100

SKETCH PLAN
OF THE
PINAWA-SEVEN SISTERS REACHES
OF THE
WINNIPEG RIVER

SHOWING UTILIZATION OF POWER UNDER VARIOUS
ASSUMPTIONS

Note—Undeveloped power is given at 24-hour power in
terms of "Commercial Power" the figure could be
increased by from 50% to 70%.

Feb. 12, 1923

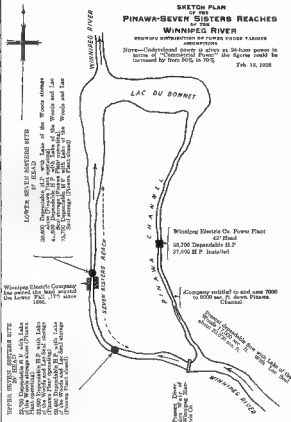


EXHIBIT 3

Power Sites on the Winnipeg River already disposed of by the Department

1. Pimais.

The Pimais site situated on the Pimais channel of the Winnipeg River has been disposed of to the Winnipeg Electric Company. The concession takes the form of a License for Water a Lease for Lands occupied by works, a License of Occupation for under water lands occupied by works and an Authorization to Flood the areas submerged by the development of them the License for Water is the dominating document. The concession is for 31 years from January 1, 1911, and is renewable for like periods in perpetuity. The installation is 21,000 horsepower.

It should be borne in mind that these works were constructed previous to the promulgation of Dominion Water Power Regulations and that the original commitment early in 1902 provided for the sale of the lands dominating the site upon the successful completion of the development had this commitment been implemented the Company would own the Pimais site outright. After the development was completed the licensee of the concession was taken in hand but during the negotiation of its terms the trend of departmental policy was evolving from that of sale to that of lease and the granting of a lease renewable in perpetuity represents a compromise between the old and the present policy, that is, between outright ownership and a lease for a fixed period.

Copies of the documents comprising this concession will be found under Exhibit No. 1A (1 to 4).

2. Pointe du Bois.

The Pointe du Bois site has been disposed of to the City of Winnipeg. The concession takes the form of a License and Lease incorporated in a single document and is for a period of 39 years from November 1, 1911, and is renewable for like periods in perpetuity. The development is fully installed with an aggregate of 100,000 h.p.

As in the case of Pimais this enterprise also antedates the Water Power Regulations, the commitment as made in 1902 was for the sale to the City of the lands for the power site at \$10 per acre and the lands required for flooding at \$1.00 per acre upon the successful completion of the initial development. The change in departmental policy which occurred during the period between the making of the original commitment and the issuance of the License and Lease was responsible for the compromise effected, namely that, instead of the outright ownership of the site the City received a License and Lease renewable in perpetuity.

Copy of the document granting this concession will be found under Exhibit 1B.

3. Great Falls.

The Great Falls site has been disposed of to the Manitoba Power Company, a subsidiary of the Winnipeg Electric Company. The company is still operating under the agreement which was entered into between the company and the Crown for the purpose of bringing about the development of the site. The installed capacity is at present 112,000 horsepower and contracts have been let for two other units which will bring the installation to 160,000 horsepower which is believed to be the ultimate capacity of the site.

Copy of the Agreement above referred to and Supplementary Agreement will be found under Exhibit 1C.

EXHIBIT 3

Statement of Power Sites on the Winnipeg River as to which commitments have been made.

Commitments have been made with respect to five power sites on the Winnipeg River, namely Slave Falls and Pine Falls, as described below:

1. Slave Falls.

This site was reserved by Order in Council dated June 26 1921 copy attached, for the benefit of the City of Winnipeg. The Order states that the city has made application to have the site reserved and that Pierre de Bess and Slave Falls could be most advantageously developed under the same management and provides that the Slave Falls site be reserved from any disposition other than in connection with the city's application until that application has been fully dealt with.

This Order was revoked by one dated January 18 1928 copy attached to the effect that the requirement of holding a public hearing at Winnipeg before granting a concession to the city was no longer made obligatory but was left to the discretion of the Minister of the Interior in accordance with the Dominion Water Power Regulations now in force.

2. Pine Falls.

This site was reserved by Order in Council dated June 11 1925 copy attached, for a period of ten years to the Manitoba Pulp and Paper Co. Ltd. The Order states that the company has been granted the exclusive right to cut pulpwood in certain areas lying east of Lake Winnipeg and has secured a priority permit to the Pine Falls site and provides that that site be reserved from any disposition other than as a source of power for the utilization of the pulp resources tributary to the southern part of Lake Winnipeg and that the site be reserved to the company for a period of ten years from the date of the agreement to be entered into with the company for the erection of a pulp and paper mill that is, ten years from June 13 1925. After the expiry of that time the company may be required to develop the site or lose their interest in it.

The agreement of June 13 1925 contains two clauses having reference to the Pine Falls site in the following terms:

1 To defer the development of the said Pine Falls water power for ten years from the date hereof and thereafter until such time as the Minister may by notice in writing to the Company require it to develop same or the Company may itself decide to commence such development; provided however that if in his opinion economic conditions or the cost of power justify so doing the Minister may permit the Company to develop the said power within the ten year period.

2 His Majesty approves of deferring the development of the said Pine Falls water power as above mentioned and will reserve same for the Company provided that the Minister may at any time after the expiration of ten years from the date hereof notify the Company that in his opinion the said power should be developed and the Company shall within one year after the receipt of such notice commence the development of such power and diligently proceed with such development in manner satisfactory to the Minister. In the event of the Company failing to commence such development within the time above stated or to diligently proceed with such development to the satisfaction of the Minister His Majesty may make such disposition of said power as to him may seem proper and all rights of the Company therein shall terminate and be at an end.

10000

COPY

Ref 1000 W

P.C. 3138
Privy Council
Canada

July 7 1931

AT THE GOVERNMENT HOUSE AT OTTAWA

Saturday, the 24th day of June, 1931

PRESENT

HIS EXCELLENCY THE GOVERNOR GENERAL IN COUNCIL

Whereas the Minister of the Interior reports that an application has been filed with the Department of the Interior on behalf of the Corporation of the City of Winnipeg for the reservation of the water power site known as Slave Falls on the Winnipeg river in Township 14 Range 14 E.P.M. 16 Manitoba

And Whereas the Corporation has constructed a large hydro-electric station at Point du Bois Falls on the same river a distance of about five miles up-stream from Slave Falls and has been granted a lease and license therefor by the Department of the Interior;

And Whereas it has been estimated by the engineers of the Department that the total possible capacity of the existing station, namely 100,000 horsepower will be absorbed in the course of a few years necessitating the development of a new source of power,

And Whereas the engineers of the Department of the Interior having thoroughly investigated the entire power reach of the Winnipeg river report that the joint development of the Point du Bois and the Slave Falls sites under one control would result in maximum efficiency and point out that amongst other advantages the large pondage above Point du Bois could be made to serve the Slave Falls development the operation of the two plants under the same management would permit of the allocation of land so as to ensure that no water was wasted administration expenses would be shared less reserve equipment be proportion to the total installation would be necessary the possibility of total failure of power would be reduced smaller operating staff would be required, less water would be wasted particularly in low water seasons the conflict over mutual interference between the two plants which would almost certainly occur were they operated under competing ownership would be avoided and the tramway constructed and operated by the City in connection with the Point du Bois development could with but a short extension serve for the transportation of all necessary material for construction at the Slave Falls power site

And Whereas by virtue of the Dominion Water Power Act (8-14 George V Chapter 14 33) the Governor in Council is empowered in such cases to order that a water power site be reserved for such period as he may deem necessary to secure joint development,

Therefore His Excellency the Governor General in Council on the recommendation of the Minister of the Interior is pleased to order and doth hereby order as follows

1 That the Slave Falls site be reserved from any disposition other than that in connection with the said application of the City of Winnipeg until the said application is fully dealt with,

2 That any concession that may be granted to the City shall strictly conform with the Water Power Regulations at that time in force,

Water Power of the Winnipeg River

3 That as a necessary preliminary to the granting of a definite concession pursuant to the Water Power Regulations then in force the following requirements shall be met,

- (a) The City authorities shall demonstrate to the satisfaction of the Minister of the Interior that there is a demand for additional power which it would be in the public interest to furnish from the Slave Falls site;
- (b) The Director of Water Power shall hold a public hearing at Winnipeg in order that a full and complete exposition of all the circumstances involved may be made and be available for the information of the Minister

(Sgd.) RODOLPHE ROUDREAU,

Clerk of the Privy Council.

MMB

COPY
P.C. 24.
Privy Council
Canada

Certified to be a true copy of a Minute of a Meeting of the Committee of the Privy Council, approved by His Excellency the Governor General on the 16th January, 1928.

The Committee of the Privy Council have had before them a report, dated 30th December, 1927, from the Minister of the Interior submitting with reference to an Order in Council dated June 21, 1921 (P.C. 2126) which ordered that the Slave Falls water-power site on the Winnipeg river be reserved from any disposition other than in connection with the application of the City of Winnipeg until that application had been fully dealt with.

That at the time this Order in Council was passed the Municipal Hydro-Electric System of the City of Winnipeg was vigorously competing with the Winnipeg Electric Railway Company, and as the latter had then initiated construction of a large hydro-electric development at Great Falls on the Winnipeg river under a concession from His Majesty, it was considered that no further development should be undertaken until the power shortly to be available had been absorbed.

That for this reason the Order in Council required that before a concession was granted to the City it should demonstrate that there was a demand for additional power which it would be in the public interest to furnish from the Slave Falls site, and further that the Director of Water Power should hold a public hearing at Winnipeg in order that a full and complete exposition of all the circumstances involved might be made and be available for the information of the Minister.

That since this order was passed the waterpower development of the City at Pointe du Bois has been installed to capacity and the city authorities have entered into a contract with the Manitoba Power Company, a subsidiary of the Winnipeg Electric Railway Company to supply up to 20,000 horsepower in bulk from its Great Falls development, where four 23,000 horsepower units have already been installed and orders placed for two additional units which will bring the Great Falls plant to its ultimate capacity.

Water Power of the Winnipeg River

That the city authorities now state that they will be faced with a shortage of power by 1931 and are, therefore, seeking authority to proceed with the development of Slave Falls, and

That the Dominion Water Power Regulations, which were passed by the Governor in Council some months subsequent to the date of the Order in Council reserving Slave Falls, enable the Minister of the Interior to order that a hearing be held at his discretion if he deems such action necessary.

The Minister therefore, recommends that the requirement of the said Order in Council (P.C. 128) that a public hearing be held in Winnipeg as a necessary preliminary to the granting of a definite concession to the City, be rescinded, and that the decision as to a public hearing be left to the discretion of the Minister of the Interior, in accordance with the Dominion Water Power Regulations now in force.

The Committee concur in the foregoing recommendation and submit the same for approval.

(Sgd.) E. J. LEMAIRE,

Clerk of the Privy Council.

MM88

COPY P.C. 808

Certified copy of a Minute of a meeting of the Committee of the Privy Council, approved by His Excellency the Governor General on the 11th June, 1925.

The Committee of the Privy Council have had before them a report, dated 8th June, 1925, from the Minister of the Interior submitting

That under the authority of Orders in Council, dated February 14, 1921, (P.C. 310), November 11, 1922 (P.C. 2344) and June 3, 1923 (P.C. 885), and subject to the conditions contained therein, the Manitoba Pulp and Paper Company Limited have been granted the exclusive right to cut pulpwood within the area known as Pulpwood Berth No. 1 lying east of Lake Winnipeg in the province of Manitoba, and also within certain other neighboring areas to be selected by the Forestry Branch of the Department of the Interior in conjunction with the said company;

That the said company have acquired, pursuant to the conditions attaching to the sale of Pulpwood Berth No. 1 a priority permit under the Dominion Water Power Regulations for the right to develop power at the site known as Pine Falls on the Winnipeg River,

That it is in accordance with the policy formulated by the Director of Water Power and approved by the Minister of the Interior that this particular power site should be reserved for use in connection with the utilization of the pulpwood resources tributary to the southern part of Lake Winnipeg which are included in the area granted to and to be selected for the said company

That it is in accordance with the administrative policy of the Department of the Interior that additional sources of power on the Winnipeg River should not be developed unless and until a market has been found for the power already developed, and that for this reason the Minister does not consider it to be in the public interest to permit development at Pine Falls at the present time,

That the said company has applied for a reservation in their favor, for ten years, of the right to develop Pine Falls as a permanent source of power for their pulp and paper mill, at the end of which time it is expected that the surplus of power, at present available for the use of the Company, will be urgently required for other purposes,

That it is in the public interest that this application should be granted.

The Minister therefore recommends:

1. That the Pine Falls water power site be reserved from any disposition other than as a source of power for the utilization of the pulp-wood resources tributary to the southern part of Lake Winnipeg.

2. That in the agreement to be entered into with the said company for the erection of a pulp and paper mill, arising out of pulpwood grants heretofore referred to, the said site be reserved to the said company for a period of ten years from the date thereof, for the future supply of power to their mill.

3. That at any time after the expiry of the ten-year period mentioned above, within six months after notice in writing has been given to them by the Minister of the Interior, the said company shall file an application for the development of the said site in accordance with the Dominion Water Power Regulations in force at the time the application is filed.

4. That thereafter the undertaking shall be carried out in accordance with the terms and conditions of the said regulations.

5. That failure on the part of the company to observe and perform any of the terms and conditions of the said agreement shall cause their right to develop Pine Falls to cease and determine.

The Committee concur in the foregoing recommendation and submit the same for approval.

(Sgd.) M. J. LEMAITRE,
Clerk of the Privy Council.

EXHIBIT 4

A Statement as to what would be the economical order of the development of the various sites of the Winnipeg River in Manitoba based on the capital cost per horsepower.

In preparing a statement setting forth the economical order of development of the various sites on the Winnipeg River in Manitoba, reference has been made to the analysis of estimated costs of development presented in Water Resources Paper No. 3, covering "Winnipeg River Power and Storage Investigations" made by the Dominion Water Power and Reclamation Service of the Department of the Interior published in 1915. While the costs of development as estimated in this report are based on pre-war figures and cannot be taken as representative of present day construction costs, nevertheless since the estimates of all the sites were prepared on exactly the same basis, and in accordance with the same principles of design and with the same unit costs throughout, they present a measure of relative as between the various sites that is amply dependable at the present time. The only other method would be to re-design and re-estimate the entire series of layouts. This would be an exceedingly lengthy process and would be productive of no more dependable results than those set forth in Water Resources Paper No. 3. To bring the costs into conformity with present day figures, it would be necessary to increase the figures given in Water Resources Paper No. 3, and recorded in the table herewith, by possibly 50 per cent.

A tabular statement is appended summarizing the results of the analysis made in Water Resources Paper No. 3, and setting forth the capital cost on a basis of 30,000 second-foot dependable flow and the cost per horsepower based

upon the dependable 24-hour power at 75 per cent efficiency as set forth in Water Resources Paper No. 3. The use of 24-hour power and 75 per cent efficiency has the effect of increasing the unit capital cost per horsepower as compared with basing it upon the prospective turbine installed capacity. However it has the advantage of being a uniform measure and of more satisfactorily demonstrating the relative as between the various sites.

The table, which is largely self-explanatory has been divided into two parts, the upper part listing the undeveloped sites still remaining on the Winnipeg River in the economical order of development as disclosed by the capital cost per horsepower listed in the last column of the table. This analysis, of course, considers each site on its own merits and does not take into account the advantages which accrue when more than one plant is operated under the same management and combined to serve one load demand.

A word of explanation is necessary with respect to the two Seven Sisters sites as included in the upper table. The plan of development for these two sites was designed and estimated in Water Resources Paper No. 3 on the basis of divided flow down the Pimawa and Seven Sisters channels, and the flow considered to be available for the Seven Sisters reach was at the time placed at 12,000 cubic feet per second. For the purpose of ascertaining the effect upon these two sites of concentrating the full 20,000 second-feet in the Seven Sisters reach and in this way placing these two sites on the same relative basis as the Pine Falls, Slave Falls and McArthur Falls sites, a very approximate re-adjustment was made of the original estimates and the results inserted in the upper part of the table. In considering therefore the figures for the Upper and Lower Seven Sisters sites in the upper table, it should be remembered that they are approximate only.

With the above explanation, the upper table indicates that there is little to choose between the Lower Seven Sisters site, the Upper Seven Sisters site, and the Slave Falls site. They are all excellent economical developments. Should the Upper and Lower Seven Sisters sites be combined into one development, the unit cost per horsepower would be materially decreased over those shown in the table.

In the lower table, there have been listed the results of the estimates made in Water Resources Paper No. 3, i. e. on the basis of 12,000 second-feet down the Seven Sisters channel. It is of interest to note how much greater is the unit cost per horsepower in this table as compared with the cost per horsepower for the same sites shown in the upper table. This comparison is directly indicative of the economic value of concentrating the full flow into the one channel.

J. T. JOHNSTON

Ottawa, February 24, 1928.

NOTE: No analysis of the annual costs has been made as they would simply reflect the deductions drawn from the analysis of the capital costs.

Water Power of the Winnipeg River

SUMMARY OF CAPITAL COST OF DEVELOPING THE REMAINING WINNIPEG RIVER POWER SITES—BASED UPON THE ANALYSIS CONTAINED IN WATER RESOURCES PAPER NO. 2, ENTITLED "WINNIPEG RIVER POWER AND STORAGE INVESTIGATIONS"—PUBLISHED IN 1915

Undeveloped Site	Head Ft.	Capital Cost	Dependable 24-hour Power @ 75% Efficiency	Capital Cost per H.P.
Pine Falls.	37	4,407,000	63,100	69.84
Lower Seven Sisters.	37	4,846,000	63,200	76.50 (approx.)
Slave Falls.	26	3,420,000	44,400	77.29
Upper Seven Sisters.	29	3,993,000	49,200	80.85 (approx.)
McArthur Falls. . . .	18	2,740,000	29,700	89.25

NOTE The above figures are based upon a dependable flow of 20,000 second-feet in the Winnipeg River, the entire flow being turned down the Seven Sisters channel.

Lower Seven Sisters.	37	3,409,000	37,900	89.96
Upper Seven Sisters.	29	2,734,000	29,800	91.63

NOTE --The two Seven Sisters developments, as estimated in the lower table, are based upon divided flow down the Pineau and Seven Sisters channels, i.e., with 12,000 second-feet down the Seven Sisters channel. It will be noted that their costs per horse-power are very materially higher than when based on the 20,000 second-feet flow shown in the upper table.

EXHIBIT 5

Statement of the advantages to be derived from the closing of the Pinawa Channel.

The material hereunder might be prefaced by the statement that the Seven Sisters reach is the main channel of the river and the Pinawa channel is the secondary channel and that it would be economically impracticable to attempt to concentrate and develop the full flow of the Winnipeg River in the Pinawa channel. If the concentration of the flow is to be realized, it must be achieved by utilizing the Seven Sisters reach.

The flow figures used herein are based upon the right of the Winnipeg Electric Company to the use of up to 9,000 second-feet in its plant on the Pinawa channel and upon the assumption that the regulated river flow with the Lee Seul reservoir in operation will be 30,000 second-feet dependable flow.

The advantages of concentrating the flow in the Seven Sisters channel might be briefly outlined as follows:

1 The Seven Sisters channel offers physical opportunities for concentrating economically a head of 88 feet, possibly up to 72.5 feet—the full drop. The concentration can probably be achieved under one head and if not under one, then under two heads.

2 As compared with the Pinawa channel, this will mean an additional block of 22,100 24-hour power over and above the amount that can practically and economically be developed with the flow divided as at present. This figure will be proportionately increased to 30,100 horsepower if the development of a greater head than 88 feet proves, upon more intensive investigation, to be practicable. In considering these figures 22,100 and 30,100 horsepower it should be kept in mind that they are quoted in terms of 24-hour power and that in actual practice they will be very materially increased owing to the more efficient utilization of the water and the more efficient operating conditions generally as outlined in paragraph 3, hereunder.

3 The entire flow will be confined to one channel, which will mean a much more efficient utilization of the water. Development under present conditions of divided flow means with separate control the necessity of providing for the handling in two separate channels of two unco-ordinated loads, with their uncorrelated demands upon the total flow available in the river. This inevitably means a wasteful and inefficient use of the available water with a consequent and proportional lessened total power output. Without an actual development on the Seven Sisters reach to analyze in conjunction with the operation of Pinawa plant, it is difficult to accurately estimate what this would mean in actual horsepower years output. A fair estimate however of the additional power made available through the greater efficiency in the use of the water in one combined development under one control would be some 20,000 horsepower years.

4 The full development of the flow available under the divided flow conditions which obtain as at the present time—even assuming it were physically and economically possible to develop the entire head in the Pinawa channel—would mean four well contained and complete power stations as against one power station with the flow concentrated in the Seven Sisters channel—i.e. three on the Pinawa and one on the Seven Sisters. This would mean a very greatly increased capital cost of construction for a lesser total power output, since even if it were physically possible to develop the four sites, the less efficient use of the water would greatly reduce the power output as per paragraph 3 above.

Such a scheme of development would, furthermore, mean the vastly greater cost of operating four separate power stations as against one modern and efficient station.

A further factor in this phase of the problem would be the connecting up of the four stations with the transmission systems and the transmission line duplication which would be necessary with separate developments under separate control.

All of the foregoing increased capital and operating costs both for power development and power transmission would inevitably be reflected in the rates which the customers, i.e., the Manitoba public, would have to pay for the power produced.

5. To summarize the foregoing, concentration of the entire flow into the Seven Sisters reach will mean the addition of 22,100 to 24,100, 24-hour power from the increased head utilized, plus 20,000 horsepower from the greater efficiency in the utilization of the combined flow as against the divided flow. Placing this on a commercial basis would warrant the installation of some 65,000 additional turbine equipment to handle the commercial load.

The increased power would, furthermore, be achieved as per paragraph 4 above, under a greatly decreased capital cost of development and under a consequent greatly decreased operating cost, both on a bulk-sum basis and on a per-horsepower-unit basis.

J T JOHNSTON

Ottawa, February 22, 1928

EXHIBIT 4

A statement as to alternative courses which might be pursued, looking to the development of the Seven Sisters reach by the Provincial Government.

The sixth item in Premier Bracken's letter reads as follows:

6. The alternative courses which might be pursued looking to the development of the Seven Sisters reach by the Provincial Government.

It is understood that by the wording of this item, Premier Bracken desires a statement as to the alternative courses which the Province might pursue if the Province itself proceeded with the actual development of power on the Seven Sisters reach and that the item is not intended to include the alternative of the Province providing, by agreement with the Winnipeg Electric Company for development by the Company setting aside an agreed-upon block of power at agreed prices, to meet the Provincial load requirements as might be estimated and agreed upon.

On this understanding the following alternative courses are outlined which might be followed by the Province looking to the development of the Seven Sisters reach:

1. The Province to proceed with the development of the power on the Seven Sisters reach without changing present conditions or disturbing the Pinawa plant of the Winnipeg Electric Company. This would mean the development of the Seven Sisters reach with the flow which is available in the river after satisfying the 8,000 second-foot requirements of the Pinawa plant, and sacrificing the advantages set forth in the statement filed as Exhibit No. 5.

The method of development might comprise either two separate developments or a single development—if two developments are proceeded with, one might be developed by the Province and one by the Company.

2. The Province to proceed with the development of the combined Pinawa-Seven Sisters reaches on the basis of concentrating the full flow of the river into the Seven Sisters channel, under the following alternative schemes:

(a) The Province to appropriate the Winnipeg Electric Company's Pinawa plant and its land and rights at the Lower Seven Sisters Falls, and to sell to the Company a block of power, the amount and price to be agreed upon between the Province and the Company.

(b) To divide the Seven Sisters development into two concentrations, the Province to develop one and the Company the other the Province to delay its development and in the meantime to arrange to purchase from the Company a block of power at rates to be agreed upon, until such time as the Provincial load has developed sufficiently to warrant the construction of the Provincial plant.

J. T. JOHNSTON

Ottawa, February 23, 1935

EXHIBIT 7

Copies of the Licenses under which existing developments on the Winnipeg River are operating.

7A Pinawa Development—Winnipeg Electric Co.

1. License for water
2. Lease for lands.
3. Lease of occupation for underwater lands.
4. Reflooding rights.

7B Pointe du Bois Development—City of Winnipeg

7C Great Falls Development—Manitoba Power Co.

1. Supplementary agreement in above

EXHIBIT 7A (1)

(1) Winnipeg Electric Company, Limited—Pinawa Development License for Water.

Department of the Interior
Canada

Ottawa,

LICENSE FOR WATER

THIS INDENTURE made in duplicate the second day of August in the year of Our Lord, One thousand nine hundred and fourteen.

BETWEEN

HIS MAJESTY THE KING, hereinafter called His Majesty, represented herein by the Honourable the Minister of the Interior, hereinafter called the Minister

Of the First Part,

and

THE WINNIPEG ELECTRIC RAILWAY COMPANY, in the Province of Manitoba, in Our Dominion of Canada, hereinafter called the Licensee.

Of the Second Part.

WITNESSETH, the lands hereinafter described are Dominion lands within the meaning of the Dominion Lands Act.

AND WITNESSETH, the Licensee is in possession of the said lands, that is to say The lands described in schedules "A" and "B" hereto annexed,

AND WITNESSETH, the Licensee has applied for a grant of the right to divert and use an amount of water from the Winnipeg river for power purposes, at any stage of such river, sufficient to properly operate the Licensee's present plant and such extensions or alterations to that plant as may be practicable, and that may be authorized and approved by the Minister and such other incidental rights as are hereinafter mentioned and the Governor General in Council has given authority for such a grant in the terms herein embodied

Now, THIS INDENTURE WITNESSETH that in consideration of the rent hereinafter reserved and upon and subject to the stipulations, provisions and conditions hereinafter contained. His Majesty doth hereby grant and demise unto the Licensee, its successors and assigns, the rights and liberties following, viz.

Water Powers of the Winnipeg River

(a) The right to take and divert from the said river down the Pisewa channel of the said river and to use the same for power purposes such amount of water measured by current meter according to current practice at any stage of the Winnipeg River as the Minister considers necessary to properly operate the Licensee's present plant and such additions or alterations to the plant as may from time to time be authorized and approved by the Minister

(b) The right to construct on the said lands, all buildings or other works necessary and incidental to the proper development of such power subject to the provisions of the patent License of occupation or other instrument which shall hereafter be executed by the Minister for the purpose of setting out the rights and obligations of the Licensee respecting the said lands.

To Have and enjoy the said rights and liberties hereby granted and devised unto the Licensee for the term of twenty-one years computed from the First day of January in the year one thousand nine hundred and eleven, subject to earlier determination as hereinafter mentioned. Yielding and paying therefor yearly and every year during the said term the sum of \$100 the same to be payable on the following days and times, that is to say In advance on the First day of January in each and every year during the said term, the first of such payments having been made on or before the accepting and delivery of these presents.

Forasmuch ALWAYS, and these presents are issued upon and subject to the following proviso and conditions, that is to say

1 That the Licensee shall and will pay the rent hereby reserved in manner aforesaid.

2 And that the Minister and his officers or servants shall at all times be permitted to enter on the said lands and to have access to the said works for the purpose of inspecting them.

3 And that the Licensee shall not assign or underlet this Grant or the rights and liberties hereby granted, or any part thereof without the written consent of the Minister

4 And that the said lands shall be used for power purposes and for no other purpose

5 And that the Licensee shall and will maintain its present or primary installation in such state as will enable it to maintain its maximum output at all times to the satisfaction of the Minister and in case of failure or neglect to do so, the Governor in Council may order the Licensee to commence to construct such works as may be necessary to bring such primary installation to its maximum capacity within a period to be fixed by the Minister which period shall not exceed one year from the time the Licensee is so ordered to construct such works, and in case of failure or neglect to commence to construct within the year it shall be lawful for the Governor in Council to cancel these presents.

6 On notice in writing from the Minister that extensions or alterations to the Licensee's present plant are necessary for the proper maximum advantageous development of the power resources of the Winnipeg River the Licensee must within one year from such notice proceed with such extensions or alterations to its present plant. Upon a report being made by the Minister to the Governor in Council at any time after the expiry of such year's notice that the Licensee has not made or commenced to make such extensions or alterations it shall be lawful for the Governor in Council to cancel these presents.

Water Power on the Winnipeg River

7. On notice in writing from the Minister that the discharge through the Lacrosse power intake works at the head of the Pigeon Rapids requires regulation to the interests of navigation or for the proper economic advantageous development of the great resources of the river or upon notice that interference or obstruction to the whole traffic at the head of the Pigeon Rapids and up the north Winnipeg River are necessary to the same interests the Governor General in Council may order that such regulations be undertaken in their most efficacious or economical form and in such a manner and in such order and by such persons, companies or governments as he may deem proper to ensure that works and the persons who get such share of any of the general interest charge of such works, maintenance or operation of such regulation or of work started or executed under charge of the Governor General in Council may include property belonging to the Lacrosse power development on the Pigeon Rapids. In the event of any interference or obstruction to or regulation of the Lacrosse's present intake works being undertaken for the purpose, improvement or for the proper economic advantageous development of the power regulation of the north Winnipeg River and as far part or all of the Lacrosse's present intake works can be effected in connection with such power development the general interest charge of the cost design, design and laying of work part or all of the present intake works may be added to be Lacrosse and further that he provide such relief be interruption to be subject of trust for its place in the Pigeon Rapids to a result of any works now or improvements or a regulation of its intake works. In case of dispute between the Minister and the Lacrosse as to the extent of the cost or as to the amount of money payable under this clause it shall be fixed by arbitration and the arbitrator to be appointed by the Minister is named by the Lacrosse and as third by the two as appointed. If the Lacrosse fails to appoint an arbitrator within ten days after being notified by the Minister it shall make such appointment or if the two arbitrators appointed by the Minister and the Lacrosse fail to agree upon a third arbitrator within ten days after their appointment or within such further period as may be fixed by the Minister or either such third arbitrator or third arbitrator as the case may be shall be appointed by the Judge of the Exchequer Court of Canada.

8. And the Minister shall determine the amount of water required to properly operate the Lacrosse's present plant and the amount of amount of water required to be diverted from the north flow at different periods of the year to supply the amount of water required to properly operate the present plant and the Minister shall notify the Lacrosse in writing of such amounts within two years from the date hereof.

9. And then the Minister shall determine from time to time the amount or amounts of water required to properly operate the Lacrosse's plant after such additions or alterations to the plant as may be approved by the Minister are satisfactorily completed, and shall also determine the amount or amounts of water required to be diverted from the north flow at different periods of the year to supply the amount or amounts of water required to properly operate the Lacrosse's plant after such additions or alterations are completed, and the Minister shall notify the Lacrosse in writing of such amount or amounts within two years from the date such additions or alterations are satisfactorily completed and in operation.

10 And that the plans and specifications of all additions or alterations to the works of the Licensee shall be subject to the approval of the Minister and shall be so approved before construction is commenced.

11 And that in connection with any alterations or additions to the Licensee's present plant or intake works the Minister shall have the right to place a qualified Inspecting Engineer on the works during construction for the purpose of seeing that all the works are carried out in accordance with the plans and specifications that have been first approved by the Minister. The Minister shall also have the right to retain a Consulting Engineer for advice in connection with the alterations or additions to the Licensee's present plant or intake works. The salaries fees and expenses in connection with the Consulting Engineer and Inspecting Engineer to be paid to them by the Minister and the Licensee to reimburse the Minister for all moneys paid in this respect upon presentation of certified accounts to the Licensee by the Minister.

12 And the Licensee shall keep a continuous record of the flow-time of the water surface in the headrace and tailrace and of the storage of water through the Pigeon channel and of the output of the station, and shall furnish to the Minister whenever required by him returns in writing of such records or of such other information as the Minister may request verified by oath of the Licensee or his manager agent or other employee cognizant of the facts in such form as the Minister may prescribe.

13 The Licensee shall maintain a system of accounting satisfactory to the Minister.

14 And that the Licensee shall do all works and things hereby authorized to be done by him upon or affecting the said lands, of His Majesty or the said river in a good and workmanlike manner and so as to cause no unnecessary damage or destruction to such lands or river or the bed or banks thereof.

15 And that the Licensee shall restore into Lac du Bonnet, the full quantity of water taken from the said river.

16 And that the Licensee shall keep His Majesty indemnified against all actions claims and demands that may be lawfully brought or made against His Majesty by reason of anything done by the Licensee in exercise or in purported exercise of the rights and liberties hereby granted.

17 And that if the Licensee shall, up to the expiration of the term hereby granted, pay the rent hereby reserved and observe and perform all and every the stipulations, provisions and conditions herein contained and on its part to be observed and performed, and being desirous of taking a renewal bonus of the said rights and liberties shall at such time give to the Minister six months' notice in writing previous to the expiration of the term hereby granted His Majesty shall and will grant to the Licensee a renewal bonus of the said rights and liberties for the further term of twenty-one years upon the same terms and containing the same stipulations, provisions and conditions as this license including this clause. But the said annual rental of \$100 shall be subject to revision by the Governor in Council at each twenty-one-year renewal period.

18 And that the prices to be charged by the Licensee to purchasers of the current or power shall at the expiration of the term hereby granted, and at the end of every seventh year during any renewal thereof be subject to the approval of the Board of Railway Commis-

shiners for Canada, or any other authority that may be substituted therefor and that no such charge shall be made or be enforceable unless and until the price has been so approved

19. And that in case of any dispute whatsoever arising in respect of the constructions or meaning of the conditions hereof numbered 6, 6, 7, 8, 12, 13 or any of them or any part thereof respectively or of anything arising out of, or incidental thereto, the decision of the said Board of Railway Commissioners or the authority substituted therefor shall in all cases and at all times be final, binding and conclusive on the parties hereto.

20. And that in case the said rent or any portion of it shall be unpaid for the space of thirty days after the same should have been paid, whether payment thereof shall have been demanded or not, or if there should be any breach on the part of the Licensee of any of the provisos or conditions herein contained then, and in such case, it shall be lawful for the Minister by notice in writing under his hand, served on or posted to the Licensee, to determine these presents, and thereupon the same shall be determined without prejudice to the remedies of His Majesty in respect of anything previously done or suffered.

Proviso. and it is hereby declared that the regulations governing the granting of water-power rights in the provinces of Manitoba, Saskatchewan and Alberta, and the Northwest Territories, in so far as the provisions of the same are applicable to the undertaking of the Licensee and in so far as they are not inconsistent with or contrary to the provisions hereof are hereby incorporated herewith.

Where the context allows the expression "His Majesty" includes the successors and assigns of His Majesty, the expression "Minister" includes the Deputy of the Minister and the successor in office for the time being of the Minister or such Deputy, and the expression "Licensee" includes the successors and assigns of the Licensee.

IN WITNESS WHEREOF the Deputy
Minister of the Interior and the
Licensee have executed these
presents

Department of the Interior
Canada

(Seal)

SIGNED, SEALED, and
DELIVERED by the Deputy
Minister of the Interior,
in the presence of
(Sgd.) H. A. Lyon

(Sgd.) W. W. Cory,
Deputy Minister of the Interior

WINNIPEG ELECTRIC RAILWAY
COMPANY

(Sgd.)

Nanton,
Vice-President.

And by the Licensee
in the presence of
Winnipeg Electric Railway Company
(Seal)

(Sgd.) F. Morton Morse,
Licensee,
Secretary

WATER POWERS OF THE WINNIPEG RIVER

*Extract from minutes of meeting of Board of Directors of Winnipeg Electric Railway Company, held at the offices of the Company this 18th day of July, 1915,
at the hour of 2 o'clock in the afternoon*

"Mr. Anderson submitted agreement between the Department of the Interior and the Company for License for the diversion of water for Pinawa channel, reporting that this was the result of long negotiations at Ottawa and was the best arrangement that could be made, and suggesting the advisability of having it closed up. Upon motion it was duly resolved that the License should be executed under the corporate seal of the Company attested by the signature of the Vice-President and Secretary of the Company."

Certified True Copy

F. Morton Morse.

Secretary-Treasurer

EXHIBIT 7A (2)

Winnipeg Electric Company, Limited- Pinawa Development

LEASE FOR LANDS

THIS INDENTURE made in duplicate the 31st day of May in the year of Our Lord, One thousand nine hundred and seventeen.

BETWEEN

HIS MAJESTY THE KING, hereinafter called His Majesty, represented herein by the Honourable the Minister of the Interior, hereinafter called the Minister,

Of the first part,

and

THE WINNIPEG ELECTRIC RAILWAY COMPANY, a body corporate having its principal office in Canada, in the city of Winnipeg, in the province of Manitoba, hereinafter called the Company or the Lessee,

Of the second part.

Witness, the lands hereinafter described are Dominion lands within the meaning of the Dominion Lands Act, and

Witness, the said company has applied for a lease of the said lands in connection with its existing water-power development on the Pinawa channel of the Winnipeg River and

Witness, on the 12th day of May, 1915, the Governor in Council passed an Order in Council approving the existing works of the company, the said works being for the diversion of water from the Winnipeg River into the Pinawa channel and for use of the said water in the development of power and for the transmission and delivery of the said power, and

Witness, under a previous Order in Council dated the 7th day of December, 1914, the Governor in Council authorized the issuance in favour of the company of a license to use water for the purpose of the said power development, such license having been subsequently executed under the authority of the said Order, being hereinafter referred to as the water license; and

Witness, by said Order in Council dated the 7th day of December, 1914, the Governor in Council authorized the grant to the company at \$50 per acre of the lands hereinafter described, but by reason of Section 4 of Chapter 27, 4-5, Geo. V, the grant authorized by said Order in Council cannot be made, and the Governor in Council by order passed on the twenty-first day of May, 1917, has authorized the execution of a lease of the Dominion lands not covered by water upon which said works are situated for the same period as that of the water license issued under the authority of the said Order in Council of the 7th December, 1914 and in the terms herein embodied.

Now, This Indenture WITNESSETH that in consideration of the rent hereinafter reserved and upon and subject to the stipulations, provisions and conditions hereinafter contained, His Majesty hereby grants unto the lessee full power to enter upon, use or occupy the following described Dominion lands (being those upon which the said works are situate and which are not covered by water) namely

Water Powers of the Winnipeg River

Part.	Sec.	Tp.	Rge.	Mer.	Area
Fr W 1, L.S. 13	1	14	13	EPM	4.70 acres
Fr L.S. 8	1	..	..	..	13.30 "
Fr E 1, L.S. 16	2	..	..	..	11.70 "
Fr NE 1, L.S. 9	10	..	..	..	9.40 "
Fr SE 1, L.S. 10	10	..	..	..	7.50 "
Fr NW 1, L.S. 12	11	..	..	..	9.80 "
Fr SW 1, L.S. 13	11	..	..	..	6.30 "
Fr All	32	..	..	..	422.40 "
Fr L.S. 8	6	14	13	EPM	4.90 "
Fr S 1, L.S. 13	6	..	..	..	3.80 "
Total					527.20 acres

For the purpose of maintaining, operating and carrying out the said works and developing the hydro-electric undertaking connected with the said water-licences but for no other purpose whatsoever

To Have And To Hold such power unto the Lessee for and during the term of twenty-one years to be computed from the 1st day of January in the year of Our Lord, One thousand nine hundred and eleven.

Provided Always, and these presents are issued upon and subject to the following stipulations, provisions and conditions, that is to say

(a) An annual rental shall be payable during the said term, clear of all taxes, rates, levies or assessments, municipal, parliamentary or otherwise which shall, during the said term be charged upon or payable in respect of the said lands or of the said water-power development. The amount of the said rental during each year of the said term shall be \$383.60 per annum.

(b) The payments due on account of the said annual rental for the years 1911 to 1917 inclusive, shall be payable on or before the encasing and delivery of these presents. Subsequent payments shall be payable on the 1st day of January of each year or at such other times as may be required by the Minister.

(c) If the Lessee shall be in arrears for six months in respect of any sums payable under these presents, provided always that the Lessee shall have been given notice of the arrears not less than sixty days before the passing of the order hereinafter mentioned, the Governor in Council may by an order in that behalf, cancel these presents and thereupon without re-entry or any other act or any suit or legal proceeding being brought or taken these presents shall, from and after the date of the passing of such order, become void and of no effect and the rights hereby granted shall absolutely cease and determine and such of the Lessee's works as are located on Dominion lands shall absolutely vest in and become the property of the Crown, provided always that His Majesty shall be entitled to recover from the Lessee the rent then accrued or accruing and that any right of action of His Majesty against the Lessee in respect of any antecedent breach of any term or condition herein contained shall not be prejudiced by such cancellation, and provided further that in such case the Governor in Council may, if he deems the Lessee entitled to any compensation for the works so taken over by the Crown, fix the said compensation.

(4) If the Lessee shall, up to the expiration of the term hereby granted, pay the rent hereby reserved, and observe and perform all and every the stipulations, covenants and conditions herein contained and on his part to be observed and performed, and being desirous of taking a renewal lease extending for a further term the rights and liberties hereby granted shall of such desire give to the Minister six months' notice in writing previous to the expiration of the term hereby granted. His Majesty shall and will grant to the Lessee a renewal lease extending the said rights and liberties for the further term of twenty-one years upon the same terms and containing the same stipulations, covenants and conditions as these presents, including this clause. But the said annual rental of \$200.00 shall be subject to revision by the Governor in Council at each twenty-one-year renewal period.

(5) The rights and liberties granted by these presents shall be subject always to compliance by the Lessee with all the terms and conditions of the said water license and if by any lawful process the said water license is terminated or cancelled or becomes void these presents shall thereupon become void and of no effect and the rights and liberties hereby granted shall absolutely cease and determine without re-entry or any other act or any suit or legal proceeding being brought or taken and without further compensation to the Lessee than that which is paid in respect of the cancellation, termination or revocation of the said water license.

(6) The Lessee before making any change in the existing works or in their location which would be a material deviation from the said works as approved by the Governor in Council as heretofore set out, or from the existing works as constructed shall submit plans of such proposed change to the Minister and secure his approval thereof.

(7) The acts of the Dominion Parliament and the regulations now in force or hereafter established from time to time in pursuance thereof for the disposal and the administration of the water powers within the control of His Majesty in the right of Canada in so far as the provisions of the same are applicable to the undertaking of the Lessee, and in so far as they are not inconsistent with or contrary to the provisions herein are hereby incorporated herewith and the Lessee shall observe and fulfill and be bound by the same.

(8) If the Lessee fails to observe or fulfill any covenant, provision, stipulation, term or condition in this lease required to be observed or fulfilled by such Lessee this lease shall be subject to adjudication by the Exchequer Court on the application of the Crown.

(9) In the event of the cancellation of this lease or of the said water license by reason of any term or condition thereof not being complied with on the part of the Lessee the effect of such cancellation and the mode of arriving at the compensation of any which is to be paid to the Lessee for the works laid in connection with the said lease and license shall be determined according to the provisions of the regulations of the Dominion Government then in force for the administration of the water powers within His control.

The expression "His Majesty" wherever used in this lease shall include the successors and assigns of His Majesty; the expression "Minister" shall include

Water Powers of the Winnipeg River

the Deputy of the Minister and the successors in office for the time being of the Minister or such Deputy, and the expression "Lessee" shall include the successors and assigns of the Lessee.

IN WITNESS WHEREOF the Deputy
Minister of the Interior and the
Lessee have executed these
presenta.

SIGNED, SEALED, and
DELIVERED by the Deputy
Minister of the Interior,
in the presence of

(Seal)

W. C. Fagan.

W. W. Cory,
Deputy Minister of the Interior.

And by the officers
of the Winnipeg Electric
Railway Company, in the
presence of

E. Anderson.

Winnipeg Electric Railway Company

(Seal)

By Nanton,
 Vice-President.
And F. Merton Morse,
 Secretary

EXHIBIT 7A (3)

Winnipeg Electric Company, Limited—Pinawa Development—
License of Occupation for Underwater Lands

LICENSE OF OCCUPATION

For those portions of the beds of the Pinawa channel of the Winnipeg River and the main Winnipeg River upon which the Winnipeg Electric Railway Company has constructed works:

Area 348.1 acres.
Rental—\$24.81.
Term —31 years—renewable.
Date 1st January, 1911

MMS.

COPY.

THIS INDENTURE made in duplicate the fifteenth day of July, in the year of Our Lord, One thousand nine hundred and nineteen.
BETWEEN:

HIS MAJESTY THE KING, hereinafter called His Majesty, represented herein by the Honourable the Minister of the Interior, hereinafter called the Minister,

Of the first part,

and

THE WINNIPEG ELECTRIC RAILWAY CO., a body corporate and politic hereinafter called the Licensee,

Of the second part.

WHEREAS, the lands hereinafter described are Dominion lands within the meaning of the Dominion Lands Act;

AND WHEREAS, the Licensee has applied for a license of occupation of the said lands for the construction and maintenance of works required for the development of power at the site known as Lower Pinawa Power Site on the Winnipeg River

AND WHEREAS, the Governor in Council, by an order dated the 7th day of December, 1914, has authorized the Minister to issue a license for the use and occupancy of the said lands in the manner and subject to the terms hereinafter set out

AND WHEREAS, the said order specified that the said license should be issued in connection with and made subject to the terms of a certain other license, hereinafter referred to as the "Water License" which was to authorize the diversion of certain of the waters of the Winnipeg River and their use in the development of power

NOW THIS INDENTURE WITNESSETH that in consideration of the rent hereinafter reserved, and upon and subject to the stipulations, provisions and conditions hereinafter contained, His Majesty hereby grants unto the Licensee, for the purpose above set forth, full power to enter upon, possess and occupy those portions of the bed of the Winnipeg River all and singular

Water Power and the Water Rights

Part.	Section	No.	Tp.	Rgs.	Mer	Area	
Fr	W1.L.S.12	1	14	12	E.P.M.	10.30 ac	covered by water
Fr	L.S.1	1				27.00 "	" " "
Fr	E1.L.S.12	3				8.30 "	" " "
Fr	NE1.L.S.3	12				8.00 "	" " "
Fr	SE1.L.S.12	12				1.00 "	" " "
Fr	NW1.L.S.12	11				0.30 "	" " "
Fr	SW1.L.S.12	11				1.00 "	" " "
Fr	A2	32				141.20 "	" " "
Fr	L.S.5	4	14	12	E.P.M.	22.00 "	" " "
Fr	S1.L.S.12	4				18.45 "	" " "
Total						348.10 acres	

To Have And To Hold such power unto the Licensee for and during the term of twenty-one years, to be computed from the 1st day of January, in the Year of Our Lord, one thousand nine hundred and eleven yielding and paying therefor yearly and every year during the said term as rent the sum of twenty-four dollars and eighty-one cents (\$24.81), the same to be payable on the following days and times, namely in advance on the 1st day of January in each and every year during the said term, the first eight of such payments including that payable the 1st day of January, 1911, having been made on or before the enacting and delivery of these presents.

PROVIDE ALWAYS, and these presents are issued upon and subject to the following stipulations, provisos and conditions, that is to say:

1. The Licensee shall and will pay the rent hereby reserved in manner aforesaid, and shall and will also pay all charges, taxes, rates and assessments whatsoever which shall, during the continuance of these presents, be charged upon or payable in respect of the said lands.

2. It shall be lawful for the Minister or any person thereunto authorized by him at all reasonable times during the continuance of these presents, to enter upon the said lands to examine the condition thereof.

3. The Licensee shall not nor will during the continuance of these presents, assign the rights and liberties hereby granted without the consent in writing of the Minister and subject to such conditions as he may impose.

4. The Governor General in Council, upon report from the Minister that such grant will not prejudicially interfere with the rights granted under these presents, may by an order grant liberty or privilege to other persons for any purpose and in any manner to enter upon, use or occupy the said lands, provided that the Minister shall give the Licensee sixty days' notice of his intention to apply for such order.

5. If the Licensee shall, up to the expiration of the term hereby granted, pay the rent hereby reserved and observe and perform all and every, the stipulations, provisos and conditions herein contained and on its part to be observed and performed and being desirous of taking a renewal license of occupation of the said premises shall of such desire give to the Minister six months' notice in writing previous to the expiration of the term hereby granted, the Minister shall grant to the Licensee a renewal license of occupation of the said demised premises for the further term of twenty-one years upon the same terms and containing

the same stipulations, provisions and conditions as those presently, including this clause. But the said annual rental payable under this license shall be subject to revision by the Governor in Council at each twenty-one-year renewal period.

6. If in order to systematize the accounting work of the Department the Minister hereafter should consider it advisable to change the times for the payment of rentals under this license, the Minister may re-adjust such times of payment provided that the aggregate payments to be made is not increased thereby.

7. The rights and privileges acquired under this license of occupation shall be subject always to compliance by the Licensee with all the terms and conditions of the said water license and if the said water license is cancelled under any term or condition thereof then this license of occupation shall, *ipso facto*, become null and void and of no effect and all the rights granted hereunder shall cease and determine, and the works and properties of the Licensee upon the lands hereinafter set out shall be dealt with in accordance with the terms of the said water license.

8. If the Licensee shall be in arrears for six months in respect of any sums payable by him under this license, provided always that he shall have been given notice of the arrears not less than sixty days before the passing of the order hereinafter mentioned, the Governor in Council may by an order in that behalf cancel this license and thereupon the said license shall become void and of no effect and the rights thereby granted shall absolutely cease and determine without further proceeding provided always that His Majesty shall be entitled to recover from the Licensee the rent then accrued or accruing, and that any rights of action of His Majesty against the Licensee in respect of any antecedent breach of any term or condition of this license shall not be prejudiced by such cancellation.

9. This license shall not be valid nor effective to authorize the use or occupancy of the lands above set out except for the purpose of constructing, maintaining and operating works thereon in connection with the power development at the Lower Finawa power site, and if for any reason the continued or further use or occupancy of any of the said lands becomes unnecessary for such purpose this license shall to such extent, as to such use or occupation become void and of no effect.

10. If, in the opinion of the Minister the Licensee fails to observe or fulfill any term or condition which, under this license, he is required to observe or fulfill, the Minister may upon giving the Licensee not less than thirty days notice in writing of such non-observance or non-fulfilment, refer the matter to the Exchequer Court and the Court may, after hearing the matter in its discretion make such order to the premises as it deems just, including the levying of such fine upon the Licensee as in the opinion of the Court will meet the needs of the case of the cancellation of the license.

Where the context allows the expression "His Majesty" includes the governors and assigns of His Majesty; the expression "Minister" includes the Deputy

of the Minister and the successor in office for the time being of the Minister, or such Deputy, and the expression "Licensee" includes the successors and assigns of the Licensee.

IN WITNESS WHEREOF the Deputy
Minister of the Interior and the
Licensee have executed these
presents.

Department of the Interior
Canada

(Seal)

SIGNED, SEALED and
DELIVERED by the Deputy
Minister of the Interior,
in the presence of

(Sgd.) W. C. FAGAN

(Sgd.) W. W. CORY
Deputy Minister of the Interior.

WINNIPEG ELECTRIC RAILWAY
COMPANY

(Sgd.) NANTON,
President.

And by the Licensee
in the presence of

(Sgd.) E. ANDERSON

(Sgd.) F. MORTON MORSE,
Secretary.

Winnipeg Electric Railway Company,
Incorporated 1892.
(Seal)

Licensee

Approved,

(Sgd.) E. ANDERSON,
W.E.R., Legal Department.

EXHIBIT 7A (4)

Winnipeg Electric Company, Limited—Pinawa Development—
Authorization for Flooding Rights

THIS INDENTURE made in duplicate this day of , in the
year of Our Lord One thousand nine hundred and seventeen,

BETWEEN

HIS MAJESTY THE KING, hereinafter referred to as His Majesty,
represented herein by the Honorable the Minister of the Interior, here-
inafter referred to as the Minister,

Of the first part,

and

THE WINNIPEG ELECTRIC RAILWAY COMPANY, LIMITED, having
its head office in Canada, in the City of Winnipeg, in the Province of
Manitoba, a body corporate hereinafter referred to as the Licensee.

Of the second part.

WITNESSETH the lands hereinafter referred to are Dominion lands within the
meaning of the Dominion Lands Act, and

WITNESSETH the Licensee has applied for an authorization to raise the waters
of the Pinawa channel of the Winnipeg River and to flood the said lands in
connection with the carrying on of its undertaking for the development of power
at the site known as the Lower Pinawa Power site on the Pinawa channel of
the Winnipeg River hereinafter referred to as the said site, and

WITNESSETH the Governor in Council by an order dated the 7th day of Decem-
ber 1914, has authorized the Minister to issue in favor of the Licensee an authori-
zation for the occupation of the said lands for flooding purposes required in
connection with the control and storage of the said waters, subject to the terms
hereinafter set out, and

WITNESSETH the said order specified that the said indenture should be signed
in connection with and made subject to the terms of a certain other license,
hereinafter referred to as the "Water License," which was to authorize the
diversion of certain of the waters of the Pinawa channel of the Winnipeg River
at the said site and their use in the development of power

Now THESE INDENTURES WITNESSETH that in consideration of the rents here-
inafter reserved and made payable to His Majesty and upon and subject to
the stipulations, provisions and conditions hereinafter contained, His Majesty doth
hereby grant and demise unto the Licensee its successors and assigns.

(a) A License to raise the waters of the Pinawa channel of the
Winnipeg River between the dam at the said site and the proposed
location of the Upper Pinawa channel power site, which is situated in
section 17 township 14, range 12, east of the principal meridian, to the
800-foot contour line Dominion Water Power Survey Datum, or to such
lower elevation as may in the opinion of the Minister be required from
time to time for the exercise of the rights granted under the said water
license and to flood any Dominion lands lying below such contour

(b) A license to use such Dominion lands as constitute the present
bed of the Pinawa channel above the said proposed location of the Upper
Pinawa channel power site for the purpose of carrying the waters
diverted from the main Winnipeg River by means of the diversion works
constructed by the Licensee under the authority of the said water
license.

(c) A License to Flood any Dominion lands which constitute the present bed of the Winnipeg River above the said diversion weir, in such manner and to such extent as may be required in the operation of the water license hereinbefore mentioned.

To Have AND TO HOLD such power unto the Licensee for and during the term of twenty-one years, to be computed from the 1st day of January in the year of Our Lord, One thousand nine hundred and eleven.

Forever Always and these presents are leased upon and subject to the following stipulations, promises and conditions, that is to say

1. An annual rental shall be payable during the said term, clear of all taxes, rates, levies or assessments, municipal, parliamentary or otherwise which shall, during the said term, be charged upon or payable in respect of the said lands or of the said water-power development. The amount of the said rental during each year of the said term shall be \$1800 per annum.

2. The payments due on account of the said annual rental for the years 1911 to 1917 inclusive, shall be payable on or before the receipting and delivery of these presents. Subsequent payments shall be payable on the 1st day of January of each year, or at such other times as may be required by the Minister.

3. The rights and liberties hereby granted with respect to the lands and waters hereinbefore set out shall be exercised only in such manner and to such extent as may in the opinion of the Minister be necessary in the exercise of the rights granted under the said water license and all other rights with respect to the said lands and waters shall remain vested in the Crown and His Majesty may enter upon, use and dispose of the said premises to such extent as not to prejudicially interfere with the operations of the Corporation under this damine.

4. The Licensee shall not during the continuance of these presents assign this authorization nor the rights and liberties hereby granted nor any part thereof without the consent in writing of the Minister and subject to such conditions as the Minister may impose.

5. The easements, rights and privileges granted under this license shall be subject always to compliance by the Licensee with all the terms and conditions of the said water license and if under the provisions of such water license or by other lawful means the said water license is terminated or cancelled or becomes null and void, then this license shall, ipso facto, become void and of no effect, and all the rights granted hereunder shall cease and determine.

6. If the Licensee shall up to the expiration of the term hereby granted, pay the rent hereby reserved and observe and perform all and every the stipulations, promises and conditions herein contained, and on its part to be observed and performed, and being desirous of taking a renewal license of the said rights and privileges shall, of such desire give the Minister two years notice in writing previous to the expiration of the term hereby granted, His Majesty shall and will grant to the Licensee a renewal license of the said rights and privileges for

the further term of twenty-one years, upon the same terms and containing the same stipulations, provisions and conditions as this license, including this clause, but the said annual rental payable under this license shall be subject to revision at the expiration of the term hereby created in the manner provided by the Dominion Water Power Regulations for the time being in force, at such times and at such times thereafter and in such manner as may be provided in the said regulations, but not oftener in any case than every ten years.

7 If in order to systematize the accounting work of the Department the Minister hereafter should consider it advisable to change the times for the payment of rentals under this license, the Minister may re-adjust such time of payment provided that the aggregate payment to be made is not increased thereby;

8. And the Licensee shall observe the Dominion Water Power Regulations for the time being in force in so far as such regulations are applicable to the operations of the Licensee and are not inconsistent with the provisions of this license

9. If the Licensee shall be in arrears for six months in respect of any sums payable by him under this license, provided always that he shall have been given notice of the arrearage not less than sixty days before the passing of the order hereinafter mentioned, the Governor-in-Council may by an order in that behalf cancel this license and thereupon the said license shall become void and of no effect and the rights thereby granted shall absolutely cease and determine without further proceeding provided always that His Majesty shall be entitled to recover from the Licensee the rent then accrued or accruing and that any rights of action of His Majesty against the Licensee in respect of any antecedent breach of any term or condition of this license shall not be prejudiced by such cancellation.

10. And the Licensee shall keep His Majesty indemnified against all actions, claims and demands that may be lawfully brought or made against His Majesty by reason of anything done by the Licensee in exercise or in purported exercise of the rights and liberties hereby granted.

11. If in the opinion of the Minister the Licensee fails to observe or fulfill any term or condition of this license which, under this license, he is required to observe or fulfill, the Minister may upon giving the Licensee not less than thirty days' notice in writing of such non-observance or non-fulfilment, refer the matter to the Exchequer Court, and the Court may after hearing the matter in its discretion make such order in the premises as it deems just including the levying of such fine upon the Licensee as in the opinion of the Court will meet the needs of the case, or the cancellation of the license and the Licensee agrees to abide by and carry out any such order

12. It is expressly understood that the rights hereby conferred shall not be looked upon as an exclusive grant, and particularly that all rights which may be required in connection with the development of the Upper Flin Flou Channel power site are expressly reserved.

WATER POWERS OF THE WINNIEPESKOW RIVER

Where the context allows the expression "His Majesty" includes the successors and assigns of His Majesty, the expression "Minister" includes the Deputy of the Minister and the successors in office for the time being of the Minister or such Deputy, and the expression "Licensee" includes the successors and assigns of the Licensee.

IN WITNESS WHEREOF the Deputy
Minister of the Interior and the
Licensees have executed these
presenta

SIGNED, SEALED and
DELIVERED by the Deputy
Minister of the Interior,
in the presence of
(Sgd.) H Chandler

(Sgd.) W W Cory,
Deputy Minister of the Interior.

**WINNIEPESKOW ELECTRIC RAILWAY
BY-LAW**

(Signed) Nanton,
Vice-President.

And by the Licensee
in the presence of
(Sgd.) C. W Chappell.

(Signed) E. Anderson,
Acting Secretary,

Licensee.

EXHIBIT 7B

City of Winnipeg—Pointe du Bois development License and Lease

THIS INSTRUMENT made to duplicate the twenty-ninth day of January in the year of Our Lord, one thousand nine hundred and eighteen,

BETWEEN

HIS MAJESTY THE KING hereinafter called His Majesty represented herein by the Honourable the Minister of the Interior hereinafter called the Minister,

Of the first part,

and

THE CITY OF WINNIPEG, in the Province of Manitoba, in our Dominion of Canada, hereinafter called the Corporation,

Of the second part.

Witness, the lands hereinafter described are Dominion Lands within the meaning of the Dominion Lands Act.

And Witness, the City of Winnipeg in the Province of Manitoba, hereinafter called the Corporation, has applied for a license to divert water from the Winnipeg River at the site known as Pointe du Bois Falls on the said river as may be required in connection with the operation of a hydro electric plant hereinafter called the plant and for a grant of certain rights in the said lands as may be required in connection therewith, and the Governor General in Council has given authority for such a license and grant upon the terms herein embodied.

Now Therefore Know Ye that in consideration of the rents hereinafter reserved and made payable to His Majesty and in pursuance of such authority and subject to the stipulations, provisions and conditions hereinafter contained His Majesty doth hereby grant and demise unto the Corporation its successors and assigns the rights and liberties following:

"A. A license to divert and use in the development of power at the plant such an amount of the flow of the waters of the said river as may be required for the operation of the plant, including the right partially completed unto the concrete structure of which has been completed but the machinery thereof not installed at its maximum capacity; the Minister's decision respecting the amount of the flow so required from time to time to be final, and to transmit and distribute such power all in accordance with the works at present in operation for the said purpose, plans of which substantially as constructed are filed in the Water Power Branch of the Department of the Interior under record numbers 86 86 86 87 88 88 141 142 143 144 and 145 and of the plans of those works which may hereafter be constructed and put in operation by the corporation under the authority herein contained all of which are hereinafter referred to as "the works."

"B. A lease of certain lands described as follows:

That certain parcel of land situate in the Province of Manitoba, at or near the site on the Winnipeg River known as Pointe du Bois Falls and being within 36 township 14 range 14 east of the principal meridian and being all of the theretofore part of the said section except fractions, subdivisions 14 and 15 thereof as shown on the official township plan there upon corrected approved and confirmed by the Surveyor General of the twenty-ninth day of August in the year of Our Lord, one thousand nine hundred and fourteen, containing 2283 acres more or less, which parcel is comprised of the following legal subdivisions and parts thereof as shown on the said township plan, namely:

Water Powers of the Winnipeg River

Legal Subdivision	Section	Township	Range	Meridian	Area
Pr 1	38	18	14	East of the Principal	18.8 acres
" 2	38	18	14	" "	5.8 "
" 3	38	18	14	" "	31.0 "
" 4	38	18	14	" "	40.0 "
" 5	38	18	14	" "	39.3 "
" 6	38	18	14	" "	9.8 "
" 7	38	18	14	" "	9.3 "
" 8	38	18	14	" "	33.4 "
" 9	38	18	14	" "	11.0 "
" 10	38	18	14	" "	2.6 "
" 11	38	18	14	" "	10.4 "
" 12	38	18	14	" "	32.3 "
" 13	38	18	14	" "	1.5 "

Total.....328.8 acres

for the purpose of constructing, operating and maintaining thereon certain works required in connection with the operation and development of the plant.

(c) A license of occupation of certain lands covered with water and described as follows

That portion of the bed of the Winnipeg River in legal subdivisions 2, 3, 4, 5, 10 and 11, of Sec 38 which lies below the 981.1 foot contour line of the Dominion Water Power Survey as shown on the third edition corrected of the official plan of township 18, range 14, east of the principal meridian, approved and confirmed by the Surveyor General on the twenty-sixth day of August, one thousand nine hundred and fourteen, and containing 175.2 acres more or less which may be more particularly set out as follows.

S. 1/2	of	N.E. 1/4	Sec. 38	Tp. 18,	Rge. 14,	East Prin. Mer	56.2 acres
L.S.	11	"	38	" 15,	" 14,	" " "	22.8 "
L.S.	3	"	38	" 15,	" 14,	" " "	8.4 "
L.S.	5	"	38	" 15,	" 14,	" " "	0.7 "
L.S.	4	"	38	" 15,	" 14,	" " "	30.3 "

Total.....125.2 acres

for the purpose of constructing, operating and maintaining thereon certain works required in connection with the operation and development of the plant.

(d) A license to raise the waters of the said river above the said Pointe du Bois Falls to the 981.1-foot contour line, Dominion Water Power Survey datum which contour line is shown on the official plans of townships 18 and 19, ranges 14 and 15, east of the principal meridian, approved and confirmed by the Surveyor General.

(e) A lease of lands at Eight Foot Falls required for the improvement of the channel of the said river, said lands being described as follows

That parcel of land in legal subdivision 4, section 23, township 14, range 14, east of the principal meridian, containing 4.3 acres, as shown on the official township plan approved and confirmed by the Surveyor General on the twenty-sixth day of August, in the year one thousand nine hundred and fourteen.

To Have and enjoy the said rights and liberties hereby granted and demanded unto the Corporation, its successors and assigns for the term of twenty years, computed from the first day of November in the year of Our Lord one thousand nine hundred and eleven. Yielding and paying therefor the rents hereinafter prescribed in advance on the first day of November in every year the rents payable for past years having been paid on or before the issuing and delivery of these presents.

Further Awaits and their presents are issued subject to the following provisions and conditions, that is to say

1 That the Corporation shall pay as rent for the rights and liberties set forth in clause a) hereof yearly and every year during the said term the sum of one hundred dollars, and in addition thereto a yearly charge of fifty cents per horsepower year on the output of the plant during the year in excess of twenty thousand horsepower years measured on the turbine shaft, the manner and method of calculating such output to be determined by the Minister such charge to be based on the output of the said previous year and to be estimated when the actual output for each year is ascertained.

2 And that the Corporation shall pay as rent for the rights set forth in clause (b) hereof yearly and every year during the said term the sum of twenty dollars.

3 And that the Corporation shall pay as rent for the rights set forth in clause (c) hereof yearly and every year during the said term, the sum of fifteen dollars.

4 And that the Corporation shall pay as rent yearly and every year during the said term for the rights and liberties set forth in clause (d) hereof the sum of one hundred dollars.

5 And that the Corporation shall pay as rent yearly and every year during the said term for the rights set forth in clause (e) hereof the sum of ten dollars.

6 And that the Corporation shall and will pay all charges, taxes, rates and assessments whatsoever which shall during the said term be charged upon or payable in respect of the demised premises.

7 The rights and liberties hereby granted with respect to the lands and waters hereinafter set out shall be exercised only in such manner and to such extent as herein specified and all other rights with respect to the said lands and waters shall remain vested in the Crown and His Majesty may enter upon, use and dispose of the demised premises to such extent as not to prejudicially interfere with the operations of the Corporation under this decree.

8 And that the Minister and his officers or servants shall at all times be permitted to enter on the said demised lands and to have access to the said works for the purpose of inspecting them, and any expenses incurred for such inspection shall, if so required by the Minister be borne by the Corporation.

9 And that the said works shall be constructed, operated and maintained to the satisfaction of the Minister.

10 And that the Corporation shall do all works and things hereby authorized to be done by it upon or about the said lands or the said river so as to cause no unnecessary damage or disturbance to the said lands or river or the bed or banks thereof.

11 And that the Corporation shall return to the said river in accordance with the said plans the full quantity of water taken from the said river.

12 And that the Corporation shall not assign or underlet this grant or the rights and liberties hereby granted or any part thereof without the written consent of the Minister.

Water Power on the Western River

13. And that the Corporation shall and will maintain its present or primary installation for the development and transmission of the said power or so as to maintain its maximum output at all times to the satisfaction of the Minister and in case of failure or neglect to do so the Minister may require the Corporation to bring such installation to its maximum capacity within a period not exceeding one year from the date of a demand for that purpose by the Minister.

14. Upon notice in writing at any time by the Minister to the Corporation that alterations or alterations to the said works are necessary to meet the public requirements for power or are necessary for the maximum advantageous development of the power capable of being developed in view of the waters available at the said site the Corporation will be bound within one year from such notice to proceed with such alterations or alterations as are specified in such notice and thereafter continuously to carry the same to completion to the satisfaction of the Governor in Council and His Majesty will grant the right and power to the Corporation subject to the provisions of the Dominion water power regulations for the time being in force to take and use such additional water as may be necessary for such additional production of power.

15. Before commencing any such alterations to existing works or to their location as would be a material deviation from the said plans or from the existing works as constructed, and before commencing works for the improvement of the channel of the river plans of such proposed changes and works shall be approved by the Minister.

16. And the Corporation shall install automatic recording gauges or such other devices as the Minister may direct and keep continuous diagrams or other records of the elevation of the water surface in the head race and tail-race, and a recording Watt meter registering the continuous electrical output of the station, all such recording instruments and devices to be of a type approved by the Minister and shall furnish the Minister whenever required with a copy of such records or of any other records desired by the Minister and in such form as he may prescribe to be verified by each of the manager, agent or other employees of the Corporation appointed of the facts.

17. And the Corporation shall maintain a system of accounting satisfactory to the Minister showing all expenses connected with the construction, maintenance and operation of the said works and the carrying on of the undertaking.

18. And the Corporation shall direct use and run the water authorized to be diverted used and raised pursuant to this grant, and shall carry out the improvement of the channel of the said river in such a manner as will not in the opinion of the Minister interfere with the maximum advantageous development of the power resources of the said river and shall conform to and comply with any order of the Minister or any person authorized by him in that behalf in respect of the control and regulation of the flow of the waters of the said river.

19. And in the event of any works being constructed along the said river or any of its tributaries by the Government of Canada or by any corporation, company or person acting on behalf of such Government for the regulation or control of the flowage of such waters or for the storage of water the result of which would be to increase the flow of water capable of being utilized at the plant and for the purposes of the undertaking connected therewith the Corporation shall within six months after the completion of such works pay to His Majesty such proportion of the cost of such works or such proportion of the interest upon such cost annually and of the upkeep maintenance and operation of such works as the Minister may consider properly chargeable to the power scheme of the Corporation, and also such cost for the additional flowage of

water created by such works and used by the Corporation as the Minister may determine. In case of dispute or difference concerning any matter arising under this clause the question or questions in dispute shall be referred to the Exchequer Court for determination.

30 And the Corporation shall observe the provisions of any Dominion or provincial statute or regulations relating to the protection from pollution or contamination of streams, and shall observe all reasonable rules and regulations which may be prescribed by the Minister or by any lawfully constituted authority for the purpose of preserving and securing the purity of the waters of the said river.

31 And the Corporation shall keep His Majesty indemnified against all actions, claims and demands that may be lawfully brought or made against His Majesty by reason of anything done by the Corporation in exercise or in purported exercise of the rights and liberties hereby granted.

32 And the Minister may at any time during the said term or any renewal thereof, for the convenience of the Department of the Interior and upon written notice to the Corporation change the times of payment of the rents hereby reserved.

33 And the schedule of prices to be charged to consumers after the expiration of the said term shall be subject to the approval of the Board of Railway Commissioners for Canada or such other authority as the Minister may designate, and such Board or other authority at any time after the expiration of each term upon the complaint of any person affected or on its own initiative may revise the said schedule of prices.

34 And the Corporation shall observe the Dominion water power regulations for the time being in force in so far as such regulations are applicable to the operations of the Corporation and are not inconsistent with the provisions of this charter.

35 If the rents hereby reserved or any part thereof respectively shall be unpaid for six months after becoming payable (whether formally demanded or not) or if any stipulation proviso or condition on the Corporation's part herein contained shall not be performed or observed then and in any of the said cases it shall be lawful for the Minister by notice in writing under his hand served on or posted to the Corporation to determine those presents and thereupon the same shall be determined and be void without re-entry or any other act or any suit or legal proceedings to be brought or taken, provided that His Majesty's right to recover from the Corporation in respect of any antecedent breach of any of the said provisos or conditions shall not be thereby prejudiced, and such of the said works and improvements as shall have been constructed and made on the lands hereby demised as are in the opinion of the Minister valuable and attachable in connection with the plant shall thereupon become the property of His Majesty the compensation therefor if any in default of agreement to be determined by the Governor in Council or by such person or authority as he may name.

36 And in the event of the determination of these presents from any cause His Majesty may acquire, take over and assume immediate possession and control of any lands, the title to which is vested in the Corporation, or any portion thereof, used in connection with the undertaking and of any interest or portion thereof which the Corporation may have in other lands so used as aforesaid, and of any buildings, works and improvements on any of the above mentioned lands and of any other properties of any nature or kind whatsoever then owned or held by the Corporation and so used as aforesaid, in which case compensation therefor

shall be made to the Corporation, to be determined, in default of agreement, by the Exchequer Court of Canada in accordance with the provisions of the water-power regulations for the time being in force

27 And His Majesty will on the written request of the Corporation made two years before the expiration of the term hereby created, and if there shall not at the time of such request be any existing breach or non-observance of any of the stipulations, provisos or conditions on the part of the Corporation herein-before contained, grant to the Corporation the rights and liberties hereby devised for a further term of twenty years from the expiration of the said term upon the same terms and containing the same stipulations, provisos and conditions as are herein contained and so on in perpetuity for further terms of twenty years at the option of the Corporation and upon the same terms and conditions as herein contained, but the rents hereby reserved shall be subject to revision at the expiration of the term hereby created, in the manner provided by the Dominion Water Power regulations for the time being in force and at such times thereafter and in such manner as may be provided in the said regulations, but not oftener in any case than every ten years.

28 And it shall be lawful for His Majesty at any time by giving previous notice in writing to the Corporation to determine this grant and devise as to any part or parts of the said lands if for any reason the continued occupancy thereof becomes, in the opinion of the Minister unnecessary for the purpose for which the said lands have been devised

Where the context allows the expression "His Majesty" includes the successors and assigns of His Majesty, the expression "Minister" includes the Deputy Minister and the successors in office for the time being of the Minister or such Deputy, and the expression "Corporation" includes the successors and assigns of the Corporation.

In Witness Whereof the Deputy Minister of the Interior and the Corporation have executed these presents.

SIGNED, SEALED AND DELIVERED

by the Deputy Minister of the Interior, in the presence of

(Sgd.) J. E. Gibson

(Sgd.) W. W. Cory,
(Seal)

Deputy Minister of the Interior

And by the Corporation in the presence of

(Sgd.) F. H. Davidson,
(Seal) Mayor
Corporation

(Sgd.) E. C. Thompson,
Treasurer

**APPROVED BY BOARD
OF CONTROL**
January 7, 1918.

(Sgd.) M. Peterson,
Secretary

(Sgd.) W. H. Evanson,
Comptroller

Certified as to form

(Sgd.) Theo. A. Hunt,
City Solicitor

EXHIBIT 7C (1)

Manitoba Power Company, Limited—Great Falls Development—
Agreement of September 1, 1915

Agreement between His Majesty the King, represented by the Honourable the Minister of the Interior and the Winnipeg River Power Company, of Winnipeg, respecting Great Falls Power Development, Winnipeg River, dated the first day of September, 1915.

Canada
Department of the Interior

WATER POWER AGREEMENT

THIS AGREEMENT made in duplicate this First day of September in the year of Our Lord, one thousand nine hundred and fifteen,

Witnesseth

HIS MAJESTY THE KING, represented by the Honourable the Minister of the Interior hereinafter referred to as the Minister,

Of the first part,

and

THE WINNIPEG RIVER POWER COMPANY, a duly constituted body corporate, having its head office in the City of Winnipeg, in the Province of Manitoba, hereinafter referred to as the Contractor,

Of the second part.

Witness, by an agreement made in duplicate upon the fifteenth day of November, A.D. 1910, between the then Minister of the Interior of Canada, of the first part and Robert Richardson Muir, of the said City of Winnipeg, grain dealer, of the second part the said Robert Richardson Muir was granted certain rights, privileges, benefits and advantages arising out of the water power and the diversion, taking and using of the waters of the Winnipeg River in the said Province of Manitoba, and of the proposed works for the development of such water power, as specified and provided in the said Agreement of the fifteenth day of November, A.D. 1910, and.

Witness, by assignment or transfer bearing date the eighth day of July, A.D. 1913 and made between the said Robert Richardson Muir, and Sir William Whyte, of the City of Winnipeg, in the Province of Manitoba, the said Robert Richardson Muir transferred, assigned and set over unto the said Sir William Whyte, his executors, administrators and assigns, all the rights, privileges, benefits and advantages granted and secured to him the said Robert Richardson Muir, by virtue of or under the said Agreement of the fifteenth of November, A.D. 1910, or arising therefrom, and.

Witness, by assignment or transfer bearing date the fifth day of March, A.D. 1914 and made between the said Sir William Whyte and the Winnipeg Power Company, a duly constituted body corporate, having its head office in the City of Winnipeg, in the Province of Manitoba, the said Sir William Whyte assigned, transferred and set over unto the said Winnipeg River Power Company, its successors and assigns, all the rights, privileges, benefits and advantages granted and secured to him the said Sir William Whyte by virtue of or under the said assignment or transfer bearing date the eighth day of July A.D. 1913 or arising therefrom, and.

With Power of the Winnipeg River

Witness, the Minister assented to each of the transfers above mentioned upon condition that the transferees in each case should agree to comply with all the terms and conditions contained in the said agreements of the fifteenth day of November A.D. 1912 and also with all the terms and conditions set forth in a supplementary agreement made on the seventeenth day of October A.D. 1913, between the Honourable the Minister of the Interior of Canada of the first part, and Sir William Whyte of the City of Winnipeg in the Province of Manitoba of the second part, which condition was agreed to by the transferees in each of the cases above mentioned, and

Witness the said Winnipeg River Power Company has proceeded in good faith to carry out the terms of the said agreement of the fifteenth day of November A.D. 1912 and of the said supplementary agreement of the seventeenth day of October A.D. 1913 and has expended large sums upon the making of surveys the preparing of plans and the doing of preparatory work in respect of the said agreements but has been prevented by circumstances that were unavoidable and not wholly within the control of the said Company from fulfilling certain of the terms of the said supplementary agreement within the time specified therein, and

Witness, it appears desirable to the Minister in the public interest to enter into a new agreement with the said Winnipeg River Power Company

NOW THIS AGREEMENT WITNESSETH

1 The Contractor undertake the construction maintenance and operation of certain works hereinafter referred to as "the said works" for the diversion of the waters of the Winnipeg River at or near the site known as "Great Falls" in the Province of Manitoba for the development of power therefrom and for the transmission and distribution of the said power under the terms of this agreement and of the license hereinafter mentioned and of any regulations governing water power rights now or hereafter in force in the said Province in virtue of the statutes of Canada made in that behalf

2 The Contractor shall during the year 1913 submit for the approval of the Minister each plan and specifications of the said works as may be required by the Minister and shall not commence the actual construction of such works until such plans and specifications have been so approved

3 Upon written notice of such approval by the Minister being given to the Contractor the Contractor shall forthwith begin the construction of the said works according to the plans and specifications so approved and shall thereafter without interruption except such as may be occasioned by stress of weather or other cases beyond the control of the Contractor (other than the want of funds) complete the construction of the said works according to the said plans and specifications

4 The contractor shall expend within one year from the date of the giving of the notice mentioned in the last preceding clause not less than the sum of one hundred thousand dollars (\$100,000) upon the construction of the said works in accordance with the said approved plans and specifications

5 The Contractor shall expend within two years of the date of the giving of the said notice that is within the second year of the construction period, not less than the sum of one hundred thousand dollars (\$100,000) over and above the amount required as aforesaid to be expended during the first year of such period

6 The Contractor shall develop and have available for use to the satisfaction of the Minister not less than five thousand electrical horsepower within five years from the date of the execution of this agreement, and shall thereafter

develop and have available for use, from time to time, such further amounts of electrical energy up to the maximum amount which can be developed at the site, as the Minister may consider necessary in the public interest.

7 The Contractor shall deposit with the Minister cheques accepted by a chartered bank to be approved by the Minister in the sum of fifty thousand dollars (\$50,000), and it is hereby agreed by the Contractor that the said fifty thousand dollars shall be forfeited to His Majesty as liquidated damages if the Contractor does not, to the satisfaction of the Minister, fulfil the terms of Clauses 4 and 5 hereof, evidence of such fulfilment to be supported by statutory declaration filed with the Minister. Upon the Minister being satisfied that the terms of the said clauses 4 and 5 have been satisfactorily fulfilled the said deposit shall be returned to the Contractor.

8 Pending the approval of plans and the completion of works, the Contractor shall, subject always to the terms of this agreement, have such interim rights of entry upon, use of, or occupation of any Dominion lands included within the following list (not in conflict with any interests in such lands heretofore disposed of by the Crown) as may be necessary for the purpose of making surveys, preparing plans, constructing works and otherwise carrying out the terms of this agreement,

Provided always that the right of entry upon, use or occupation of any Dominion lands herein authorized is to be exercised only in such manner and to such extent as may be necessary for the purposes aforesaid and no further; and if after the submission and approval of the plans of the proposed works and of the plans of the survey of the lands required by the Contractor for the undertaking or after the partial or final construction of the proposed works it should appear to the Minister that further entry upon, use of, or occupation of the said lands is unnecessary for the carrying out of the said purposes, the right of entry upon, use of, or occupation of the said lands may then, to such extent, be withdrawn by the Minister

Pr. N.E.1 of Section 34
 Pr. E.2 of the S.E.1 of Section 34
 Pr. Section 35 except L.S. 8
 All in Tp. 18, R. 11, E
 Also Pr. W.1 and Pr. W.2 of E.2 of Section 2
 Pr. E.2 and E.4 of the W.1 of Section 3.
 Pr. Section 10
 Pr. W.1 and L.S. 10 and 16 and Pr. L.S. 16, Section 11
 Pr. Section 14
 Pr. Section 15
 E.2 of Section 21
 Pr. Section 22
 Pr. Section 23
 N.W.1 and the W.2 of the S.W.2 of Section 24.
 W.1 of Section 25.
 Section 26 (Pr.)
 Pr. Section 27
 Pr. S.E.1 of Section 29 and Pr. N.E.1 of Section 29, (south of river)
 Island in the N.E.1 of Section 29.
 Pr. L.S. 13, Section 29.
 Pr. L.S. 18, Section 30.
 S.E.1 of Section 31
 S.W.1 of Section 32.
 All in Tp. 17-11-E

Wages Payable on the Warrumbungle Roads

8. The Contractor shall pay for the use of each of the said lands as an Irrigation Lands during the term of this agreement an annual rental of £400, the first payment on account of such rental to be payable upon the execution of this agreement and to constitute the rental for the calendar year 1911; the rental thereafter to be payable on the first day of January of each year in advance.

Provided that upon the execution of the lease as hereinafter set forth, the rental paid under this agreement on account of the portion of the calendar year which is subsequent to the date of the execution of the said lease shall be credited in part payment of the first year's rental under the said lease.

9. In the event of the said rental not being paid by the Contractor for any part of the term of this agreement or the manner and at the time specified or in the event of the non fulfilment by the Contractor of any of the terms, conditions and covenants in the agreement contained the Minister may at any time thereunto lawfully entitled before the expiry of the term of this agreement.

10. Subject to the procedure set out by sub-articles 3, 4, 5 and 6 of Section 16 of the Irrigation Lands Act, the Minister agrees that the Contractor shall have the right to exercise the powers given under Section 14 sub-article 1 of the Irrigation Lands Act for the appropriation of the lands required for the development of the water power including lands required for storage works and for transmission lines and terminal stations according to the plans and specifications that are approved by the Minister as aforesaid. In case of any dispute as to what or how much land is so required the question shall be decided by the Minister whose decision shall be final.

11. In the event of the substitution of this agreement or in the event of the expiration or termination of the licence issued pursuant thereto, within any of the terms or conditions of said agreement or of the said licence, the Minister shall have the option of taking over all or any part of the lands or any interest therein which may have been acquired by the Contractor at the same price as was paid for such lands by the said Contractor.

12. During the construction of the said works the Minister or any engineer appointed by him for that purpose shall have free access to all parts of such works for the purpose of examining and inspecting the same and of ascertaining if the construction thereof is in accordance with the plans and specifications thereof approved of by the Minister and whether the terms and conditions of this agreement are being fulfilled by the Contractor.

13. The Minister shall have the right to place a qualified supervisor on the works during construction for the purpose of seeing that all the works are carried out in accordance with the approved plans. The Minister shall have the right to retain a Consulting Engineer for advice in connection with the plans or works of the Contractor. The salaries, fees and expenses in connection with the Consulting Engineer and Inspector to be paid to them by the Minister. The Contractor to reimburse the Minister on or before the first of January in each year during construction for all moneys paid to the expert upon presentation of certified accounts to the Contractor by the Minister.

14. The Contractor shall abide by orders to and carry out all written instructions of the Inspecting Engineer regarding the construction of all works in accordance with the plans and specifications approved by the Minister and in case of dispute regarding such written instructions or regarding the plans and specifications the Minister's decision to be final and conclusive; and in case the Contractor does not abide by orders to and carry out the written instructions of the Inspecting Engineer the Minister may require the Contractor to suspend all operations with respect to the works herein mentioned until he gives instructions to resume operations.

Terms Pertaining to the Winnipeg River

14. The Contractor shall, after the completion of the works, maintain and operate the same to the satisfaction of the Minister and the Minister shall have power at any time to have the said works inspected by such officer or engineer as he may appoint for the purpose and the Contractor shall pay all expenses associated with such inspection, including any fee or remuneration paid the inspecting officer or engineer for such inspection upon the presentation of certified accounts to the Contractor by the Minister.

15. The Contractor shall cause such surveys to be made by a Dominion Land Surveyor as the Minister may direct to properly locate any land affected by the proposed works and should such survey be made by a Departmental surveyor the Contractor shall reimburse the Minister for all salaries and expenses for such surveys upon the presentation of certified accounts to the Contractor by the Minister.

16. The Contractor shall submit such reports of progress during construction of the said works as the Minister may from time to time require.

17. The Contractor shall comply with the provisions of the Navigable Waters Protection Act before any actual construction work is commenced.

18. The Contractor shall observe and conform with respect to the works covered by this agreement all rules and regulations which may be made or approved by the Minister or other duly constituted authority for the purpose of preserving and securing the purity of the water of the Winnipeg River and shall comply with any Dominion or Provincial Statutes regarding the protection from pollution or contamination of streams or other waters.

19. The Contractor shall provide the necessary way to return and shall thereby return all waters that may be taken and diverted from the said Winnipeg River to the channel through which they would have flowed if there had been no taking or diversion thereof and the said waters shall be so returned in such a manner as shall not lessen the volume of water in the said channel from the point therein at which such waters shall be so returned as compared to the volume of water that would have flowed through such channel if there had been no taking or diversion thereof from the waters of the River.

20. The Contractor shall at no time raise the level of the water in the Winnipeg River or permit the level to be raised higher than the elevation which shall be fixed from time to time by the Minister or by a person authorized thereto by the Minister.

21. Before being put into effect the Contractor shall submit a schedule of the rates and prices to be charged to the public for the use of the power to the Board of Railway Commissioners of Canada or to any other board or commission designated by the Governor in Council for adjustment and approval and no rates or prices for power shall be legal or enforceable until such schedule has been so adjusted and approved and such schedule shall be re-adjusted and approved by such Board or Commission every seven years during the term of the lease and license and each renewal thereof.

22. That pursuant to the Statute in that behalf no member of the House of Commons of Canada shall be admitted to any share or part of this agreement or to any benefit to arise therefrom.

23. The Contractor shall not assign this agreement or any of the powers or privileges herein referred to without first obtaining the written consent of the Minister.

24. If any covenant, condition, duty, obligation or agreement on the Contractor's part herein contained shall not be performed or observed, it shall be lawful for the Minister by writing under his hand to declare this agreement to

be null and void and all improvements made on said lands to be forfeited to His Majesty and that upon such declaration these presents and everything therein contained shall immediately become and be absolutely null and void, and the said improvements shall thereupon be forfeited to His Majesty.

27. Upon the completion by the Contractor to the satisfaction of the Minister of the said works and upon the observance and fulfillment by the Contractor of all the terms, conditions and covenants required under this agreement and under the regulations governing water power rights now or hereafter in force to be observed or fulfilled by the Contractor the Minister shall execute in favour of the Contractor a license authorizing the diversion and use for power purposes of the entire storage of the Winnipeg River at or near the site known as "Great Falls" according to such plans and of operation as may have been approved by the Minister reserving however to the Crown the right to take such waters as may be required for forage in the event of the exhaustion of the said river and subject to the regulations governing water power rights then or thereafter in force and the following special terms and conditions:

(a) The term of the license to be twenty-one years, renewable for three further consecutive periods of twenty-one years, each under the procedure provided for renewal of license in the regulations in force at the time renewal is applied for. Provided that the first term shall not in any case extend beyond the end of a period of twenty-six years from and after the date of this agreement.

(b) The Contractor shall during the first term of the license, pay to the Minister an annual rental of fifty cents (50c) per horsepower at the maximum station output during the year. The manner and method of calculating this station output shall be determined by the Minister his decision to be final. The first year's license rental shall be payable upon the issue of the said license. Subsequent rental shall become payable annually thereafter. Provided that the license rental for any year during the first term of the license shall in no case be less than twenty five hundred dollars (\$2,500) and that such rental fee shall in any case begin to run not later than five years from and after the date of this agreement.

(c) In the event of the said rental not being paid by the Contractor for any year of the term of the license in the manner and at the time specified, or in the event of the non-fulfilment by the Contractor of any of the terms, conditions and covenants in the license contained, the Minister may on giving the Contractor three months' written notice cancel the license and any lease granted in connection with the undertaking.

(d) In the event of any Regulation works being undertaken on the upper waters of the Winnipeg River by the Government of Canada, or by any commission, company or person upon authority of said Government or by any Government commission or person upon agreement with the Minister for the purpose of regulating and controlling the storage of the Winnipeg River in the interests of power development on the Winnipeg River the Contractor shall within six months' notice in writing from the Minister pay the Minister such share of the gross net revenue charge upon the cost upkeep maintenance and operation of such regulating works, or such rental for the water used by the Contractor as the Governor General in Council may consider proper.

WATER POWER OF THE WINNIPEG RIVER

chargeable to the Great Falls power development. In case of dispute between the Minister and the Contractor as to the amount of money payable under this clause the matter shall be referred to the Exchequer Court of Canada for decision.

(a) The Contractor shall install automatic recording gauges or such other devices as the Minister may direct and keep continuous diagrammatic chart records of the elevations of the water surface in the headrace and tailrace and also a recording Watt meter registering the continuous electrical output of the station, all of such recording instruments or devices to be of a type approved by the Minister and shall furnish the Minister whenever required by him copies of such records, verified by oath of the Contractor or his manager agent or other employee competent of the facts, in such form as the Minister may provide.

(f) The Contractor shall maintain a system of accounting and records satisfactory to the Minister.

(g) Each of the provisions of this agreement as are applicable to the conduct of the Licensee or to the administration of the waters of the said Winnipeg River the use thereof in the development of power, and the transmission and distribution of such power shall not be terminated by the issue of the license but shall be incorporated in and become a part thereof.

28. Upon the completion by the Contractor to the satisfaction of the Minister of the said works and upon the observance and fulfillment by the Contractor of all the terms, conditions and covenants required under this agreement and under the regulations governing waterpower rights now or hereafter in force to be observed or fulfilled by the Contractor the Minister shall exercise in favor of the Contractor a lease of such of the Dominion lands as are mentioned in Section 1 hereof as have not heretofore been disposed of by the Crown, and as are then, in the opinion of the Minister necessary in connection with the undertaking of the Contractor the lease to be for the same term of years as the license and to run concurrently therewith and to be revocable in like manner and to be subject as nearly as may be to all the terms and conditions of the said license. The rental to be paid by the Contractor under such lease during the initial term of twenty-one years of such lease shall be twenty-five cents (.25c) per acre provided always that the said rental shall in no case be less than four hundred dollars (\$400) per annum, payable at like times and in like manner and subject to the same penalties as are provided for the payment of license rentals.

29. If in order to systematize the accounting work of the Department the Minister hereafter should consider it advisable to change the times for the payment of rentals under the said license and lease, the Minister may re-adjust such times of payment provided that the aggregate payment to be made under the said license and lease is not increased thereby.

30. The word "Contractor" wherever it appears in this agreement shall include the successors and assigns of the said Winnipeg River Power Company and the Licensee under the license issued pursuant of this agreement.

31. The word "Minister" wherever it appears in this agreement shall include any future Minister of the Interior or person lawfully acting in that capacity.

WATER POWERS OF THE WINNIPEG RIVER

In Witness Whereof the Honourable the Minister of the Interior has caused these presents to be signed by his deputy, and the seal of the Department of the Interior to be affixed hereto, and the said Winnipeg River Power Company has executed these presents on the day and year first above written.

Witness as to execution
by Deputy Minister of
the Interior

(Seal) W W Gory,
Deputy Minister of the Interior

H. A. Lyon
Witness as to execution
by the Company

WINNIPEG RIVER POWER COMPANY,
INCORPORATED

(Seal)

W Phillips.

By Nathan,
President.

And P Marion Morse,
Secretary.

EXHIBIT 7C (2)

**Manitoba Power Company Limited, Great Falls Development,
supplementary agreement of March 31, 1919.**

Supplementary agreement between His Majesty the King, represented by the Honourable the Minister of the Interior and the Winnipeg River Power Company of Winnipeg respecting Great Falls Power development, Winnipeg River, dated the thirty-first day of March, 1919

THIS AGREEMENT made in duplicate this Thirty-first day of March, in the year of Our Lord, one thousand nine hundred and nineteen,

BEFORE US

HIS MAJESTY, THE KING, represented by the Honourable the Minister of the Interior hereinafter referred to as the Minister,
Of the first part,

and

THE WINNIPEG RIVER POWER COMPANY, a duly constituted body corporate having its head office in the City of Winnipeg in the Province of Manitoba, hereinafter referred to as the Contractor,

Of the second part.

WITNESSE, by an agreement made in duplicate upon the fifteenth day of November, A.D. 1910, between the then Minister of the Interior of Canada, of the first part, and Robert Richardson Muir of the said City of Winnipeg grain dealer of the second part, the said Robert Richardson Muir was granted certain rights, privileges, benefits and advantages arising out of the water power and the diversion, taking and using of the waters of the Winnipeg River in the said Province of Manitoba, and of the proposed works for the development of such water power as specified and provided in the said agreement of the fifteenth day of November A.D. 1910, and

WITNESSE, by an assignment or transfer bearing date the eighth day of July A.D. 1913, and made between the said Robert Richardson Muir and Sir William Whyte of the City of Winnipeg, in the Province of Manitoba, the said Robert Richardson Muir transferred, assigned and set over unto the said Sir William Whyte, his executors, administrators and assigns, all the rights, privileges, benefits and advantages granted and secured to him the said Robert Richardson Muir, by virtue of or under the said agreement of the fifteenth day of November, A.D. 1910, or arising therefrom, and

WITNESSE, by assignment or transfer bearing date the fifth day of March, A.D. 1914, and made between the said Sir William Whyte and the Winnipeg River Power Company a duly constituted body corporate, having its head office in the City of Winnipeg in the Province of Manitoba, the said Sir William Whyte assigned, transferred and set over unto the said Winnipeg River Power Company its successors and assigns, all the rights, privileges, benefits and advantages granted and secured to him the said Sir William Whyte by virtue of or under the said assignment or transfer bearing date the eighth day of July, A.D. 1913, or arising therefrom, and

WITNESSE, the Minister assented to each of the transfers above mentioned upon conditions that the transferees in each case should agree to comply with all the terms and conditions contained in the said agreement of the fifteenth day of November, A.D. 1910, and also with all the terms and conditions set forth in a supplementary agreement made on the seventeenth day of October, A.D.

WATER POWER OF THE WINNIPEG RIVER

1912 between the then Honorable the Minister of the Interior of Canada, of the first part and the Winnipeg Works of the City of Winnipeg, to the Province of Manitoba, of the second part which condition was agreed to by the transferee in each of the cases above mentioned, and

Whereas upon the first day of September A.D. 1915 the then Minister of the Interior of Canada entered into a new agreement in duplicate with the said Winnipeg River Power Company for the construction, maintenance and operation of certain works hereinafter referred to as the said works for the diversion of the waters of the Winnipeg River at or near the site known as Three Falls, in the Province of Manitoba, for the development of power therefrom and for the transmission and distribution of the said power under the terms of this new agreement and of the terms hereinafter mentioned and of any regulations governing water power rights now or hereafter in force in the said province in virtue of the Statute of Canada, made in that behalf and

Whereas the said Winnipeg River Power Company has proceeded in good faith to carry out the terms of the said agreement of the first day of September A.D. 1915 and has expended large sums of money in the making of surveys, the preparing of plans, the construction of a railway to the site and the doing of other preparatory work in respect of the said agreement but has been prevented by circumstances arising out of the war of 1914-1918 from completing the works of the said agreement and the United Kingdom of Great Britain and Ireland and her Colonies from fulfilling certain terms of the said agreement within the time specified therein and from making the necessary arrangements for financing the construction of the said works, and

Whereas it appears desirable to the Minister in the public interest to grant certain of the terms and conditions of the said agreement of the first day of September A.D. 1915 hereinafter referred to as the original agreement,

Now Therefore This Developmentary Agreement Witnesseth that the terms and conditions of the original agreement shall be amended as follows:

A. Clause 1 of the original agreement is amended and shall read as follows:

"1. The Contractor shall, during the year 1915 submit, for the approval of the Minister such plans and specifications of the said works as may be required by the Minister and shall not commence the actual construction of such works until such plans and specifications have been so approved.

B. Clause 2 of the original agreement is amended and shall read as follows:

"2. The Contractor shall develop and have available for use in the satisfaction of the Minister not less than five thousand electrical horsepower at or before the 1st day of September A.D. 1919, and shall thereafter develop and have available for use from time to time such further amounts of electrical energy up to the maximum amount which may be developed at the site as the Minister may consider necessary in the public interest.

C. The sum of Fifty Thousand Dollars (\$50,000) deposited with the Minister by the Contractor as agreed under Clause 3 of the original agreement shall be returned to the Contractor after the execution of the Supplementary Agreement and shall be expended by him only in furthering the development of water power at Three Falls in a manner satisfactory to the Minister and the Contractor shall submit to the Minister every twelve months to do so amounts supported by statutory returns showing the manner in which the said fifty thousand dollars (\$50,000) has been expended and clause 3 of the original agreement be amended and shall read as follows:

WATER POWERS OF THE WINNIPEG RIVER

"7 The Contractor shall, within ninety days after receiving notice in writing from the Minister, which notice may be given at any time after the written notice of the approval of the final plans and specifications of the said works has been given to the Contractor by the Minister, deposit with the Department of the Interior cheques accepted by a chartered bank to be approved by the Minister to the sum of fifty thousand dollars (\$50,000) and it is hereby agreed by the Contractor that the said fifty thousand dollars (\$50,000) shall be forfeited to His Majesty as liquidated damages if the Contractor does not, to the satisfaction of the Minister, fulfil the terms of Clauses 4 and 5 of the original agreement, evidence of such fulfilment to be supported by statutory declaration filed with the Minister. Upon the Minister being satisfied that the terms of the said Clauses 4 and 5 have been satisfactorily fulfilled, the said deposit shall be returned to the Contractor."

D. Section (a) of Clause 27 of the original agreement is amended and shall read as follows:

"(a) The term of the license to be twenty-one years, renewable for three further consecutive periods of twenty-one years each, under the procedure provided for renewal of licenses in the regulations in force at the time each renewal is applied for, provided that the first term shall not in any case extend beyond the 1st day of September, A.D. 1945."

In Witness Whereof, the Deputy Minister of the Interior and the Contractor have executed these presents

SIGNED, SEALED and
DELIVERED by the Deputy
Minister of the Interior,
in the presence of,

Department of the Interior
Canada

(Seal)

W J F. Pratt,

This 22nd day of April,
One thousand, nine hundred and
nineteen.

W W Cory,
Deputy Minister of Interior

And by the Contractor,
in the presence of
E. H. Reeves,

This 7th day of April,
One thousand, nine hundred and
nineteen.

(Seal)

Winnipeg River Power Co.
Contractor
By Nanton,
President
And L. Park,
Secretary

WINNIPEG RIVER POWER CO.,
LIMITED

(Seal)

Approved

E. Anderson,

Legal Department. "W.R.P."

EXHIBIT B

Contract between Manitoba Power Company Limited and City of Winnipeg, for supply of power to City.

AGG/COPY.

THIS AGREEMENT made the day of A.D. 1935.

WITNESSETH

MANITOBA POWER COMPANY, LIMITED,
hereinafter called the Vendor

Of the first part;

THE CITY OF WINNIPEG,
hereinafter called the City

Of the second part,

and

WINNIPEG ELECTRIC COMPANY,
hereinafter called the Company

Of the third part.

In consideration of the mutual covenants and agreements hereinafter contained, the parties hereto covenant and agree each with the other as follows

1. *Class of Power to be delivered and taken*

The power hereinafter mentioned shall be hydro electric power (except in the case of the power provided for in article 3 hereof), to be delivered continuously for twenty-four hours of each and every day of each and every year during the existence of this agreement.

2. *Base of Purchase and Quantity of Power*

During the period of this Agreement as provided in article 4 hereof, the Vendor covenants to keep available and to sell to the City and by means of the plant and system of the Company to deliver, and the City agrees to purchase from the Vendor and to receive through the Company, and the Company hereby covenants that the Vendor will sell and supply and that the Company will deliver to the City, hydro electric power based upon delivery at unity annual load factor of such of the following minimum quantities applicable as specified below during each of the respective contract years, or at the City's option of amounts greater than such minimum quantities up to the following maximum quantities as specified below during each of the respective contract years.

Contract Year Ending August 31st	Nine-Year Contract			
	Minimum		Maximum	
	Horsepower	Kilowatt Hours	Horsepower	Kilowatt Hours
1939	5,500	43,477,240	10,000	85,348,800
1940	13,500	86,221,960	20,000	170,698,200
1941	20,000	130,832,200	30,000	256,048,800
1942	23,500	147,835,500	30,000	256,048,800
1943	23,500	186,641,480	30,000	256,048,800
1944	27,000	176,443,920	30,000	256,048,800
1945	27,000	176,443,280	30,000	256,048,800
1946	28,000	117,832,280	30,000	130,698,200
1947	9,000	58,314,640	15,000	85,348,800
1948				
1949				

Water Power of the Wisconsin River

Contract Year Ending August 31st	Eleven Year Contract			
	Minimum		Maximum	
	Horsepower	Kilowatt Hours	Horsepower	Kilowatt Hours
1929	4,500	42,477,240	10,000	85,340,800
1930	13,500	58,321,680	30,000	130,689,200
1931	30,000	130,694,200	30,000	196,044,800
1932	22,500	147,036,500	30,000	196,044,800
1933	22,500	166,641,480	30,000	196,044,800
1934	27,000	178,443,920	30,000	196,044,800
1935	27,000	178,443,920	30,000	196,044,800
1936	27,000	* 178,443,920	30,000	196,044,800
1937	27,000	178,443,920	30,000	196,044,800
1938	18,000	117,828,280	30,000	130,689,200
1939	9,000	58,914,440	10,000	45,340,800

3. Rate to be Paid for Purchased Power

After the date for the first delivery of power set forth in article 2 hereof the City agrees to pay the Vendor monthly within twenty days after the date of the rendering of the Vendor's accounts for the amount of power hereunder at the net rate of 3.68 per kilowatt hour equivalent at unity annual load factor, to the net rate of 17.50 per year per horsepower of maximum demand. The amount of power hereunder to be paid for monthly shall be the greater of either one-twelfth of the minimum kilowatt hours for each contract year or the kilowatt hours equivalent to seven hundred and thirty (730) hours use of the greatest amount of horsepower taken by the City in such month, such horsepower to be determined by the integration for twenty consecutive minutes of the chart of a Graphic Maximum Demand Meter or meters of a type to be mutually approved by the parties hereto. In the event of the Vendor delivering power to the City at more than one point, it is mutually agreed that simultaneous readings of maximum demands shall be taken at each point of power delivery by means of synchronizing the clocks of the Graphic Maximum Demand Meters and that the maximum demand shall then be taken as the sum of the simultaneous readings of the individual Graphic Maximum Demand Meters.

4. Duration of Agreement

It is mutually agreed between the parties hereto that this contract shall be effective from the date of the execution thereof and shall remain in full force up to and including the 31st day of August, A.D. 1939, with the option to the City to terminate the contract two years earlier upon giving the Vendor written notice not later than the 31st day of August, A. D. 1937, and that the Vendor will keep available and sell, and will deliver through the medium of the system of the Company as aforesaid and the Company will deliver to the City and the City will purchase receive and pay for the power hereinbefore contracted for at the price and upon the terms and conditions herein set forth, from the 1st day of September A. D. 1929, and thereafter during the continuance of this contract it being understood that should the City exercise its option to terminate the contract in the year 1937 as herein provided the schedule of figures contained in article 2 hereof, under the heading "Eleven Year Contract" shall cease to apply, and only those appearing under the heading of "Nine Year Contract" shall apply for the balance of the term of said contract.

Water Power of the Winnipeg River

5. Voltage, Frequency and Delivery of Power

1a. The power delivered hereunder shall be three-phase current alternating at approximately 60 cycles per second and having an electrical pressure between phases of approximately 37,000 volts.

1b. The Vendor agrees to deliver power hereunder by means of and through the plants and systems of the Company which power the Company agrees to deliver to the City at the terminals of its switches to be supplied and erected by the City adjacent to the Company's transmission line at its 1100 Street Station, or at such other point or points in the City of Winnipeg as may be mutually agreed upon.

2. As the power stated to be delivered to the City by the Vendor except when the City takes issue otherwise the word "deliver" is used in this Agreement with reference to electric energy or power it means and shall be interpreted to mean readiness and ability on the part of the Vendor to deliver power to the City and the maintenance by the Vendor of the voltage and frequency at the approximate values outlined hereunder at the point of delivery shall constitute valid and full delivery of power.

3. The Vendor and the Company do and each of them doth agree to provide for the satisfactory performance of this Agreement, such necessary equipment and labor as shall be sufficient to develop and transmit and deliver the amounts of power to be supplied under this contract under all conditions of normal commercial operation with the understanding that proper and sufficient machinery and equipment shall be available at all times of peak operation and adequate for the maximum requirements of this contract.

In the event of a temporary shortage of power in any portion of the Vendor's and of Company's systems sufficient to prevent the performance by them of this contract it is agreed that priority of power supply shall be given for an amount of power sufficient for the then normal requirements of the Street Railway system now supplied by the Company and along the Southern Rapid Transit Company and the Winnipeg Railway and Lake Winnipeg Railway Company and for the water supply, hospitals, public street lighting and public buildings in the municipalities adjacent to Winnipeg. If the available and otherwise hydro electric equipment of the City is being fully utilized at such time of temporary shortage of power it is mutually agreed that the remainder of the Vendor's and Company's available power shall be allocated as follows:

1. Until such period of temporary shortage of the continued supply of power extended for exceeds a total of twenty-four (24) hours in any month, half of the remainder of the Vendor's and Company's power shall be at the disposal of the Vendor and the Company while the other half shall be reserved for the performance of the Vendor's and Company's obligations under this contract.

2. When such period of temporary shortage of power has extended a total of twenty-four (24) hours in any month, the City shall have prior claim for the performance of this contract upon all the Vendor's and Company's available power other than that necessary for the then normal requirements of the Street Railway system now supplied by the Company including Southern Rapid Transit Company and Winnipeg Railway and Lake Winnipeg Railway Company and for the water supply, hospitals, public street lighting and public buildings in the municipalities adjacent to Winnipeg. It is understood and agreed that during any period of such temporary power shortage the City shall pay the Vendor for only such power as the Vendor shall be able to deliver.

With Power of the Western Area

6 Requirements of City's and Vendor's Apparatus and of Taking Power

(a) The Vendor agrees to maintain the voltage and frequency of its power reasonably constant so that the same shall not fluctuate sufficiently to prevent successful and efficient operation of any approved commercial electrical apparatus which the City shall serve from its circuits.

(b) The electrical frequency of the alternating current supplied by the Vendor to the City shall not vary more than one cycle under conditions of normal steady load. The Vendor and the Company and the City shall maintain and keep during the period of this Agreement their machinery in such condition that the speed control and regulation shall be sufficiently steady to prevent a continuous pulsating fluctuation in the loads carried by the Vendor's and the Company's and the City's power plants. The Vendor shall maintain its voltage at the point of supply to the City sufficiently steady so that the daily variations under normal operation conditions shall not be below 10,000 volts nor above 10,500 volts.

(c) The step-down transformers controlling apparatus and wiring on the City's side of its oil switches shall all be furnished erected and maintained in proper condition by the City who shall select and use transformers and apparatus suitable to receive the power delivered by the Vendor. The City's and the Vendor's and the Company's transmitting transforming and wherever possible all other apparatus and devices connected to their electrical circuits shall be the standard design and construction in commercial use and shall be operated and equipped with special reference to securing high efficiency and good operation on all inter connected circuits and the City and the Vendor and the Company shall install and equip their circuits with such approved protective devices as are in commercial use and shall operate their apparatus and circuits in such manner as will to the then possible greatest extent protect each other's apparatus and circuits from damage and interruption by lightning short circuiting or other cause. All electrical equipment and construction of the City and the Vendor and the Company shall be subject to the mutual approval of all parties to the Agreement but such approval shall not be withheld except where necessary for reasonable protection.

(d) The City at all times shall take and use the three-phase power so that the power factor will not be less than 85%. Whenever the power factor is less than 85% lagging the Vendor for taking purposes may increase the kilowatt hours to be paid for during such period by an amount equal to the percentage difference between 85% power factor and the actual power factor obtained, in which event the City agrees to pay for such added kilowatt hours at the rate set forth in article 3 hereof.

7 Measurement of Power

(a) The power delivered hereunder shall be measured at the point or points of delivery by suitable instruments, in terms of electrical units as standardized by the British Board of Trade.

(b) The Vendor and the City for the measurement of power hereunder shall each provide install and keep in repair a separate set of instruments, together with their necessary series and potential transformers and protective devices. The Company shall furnish free to the City suitable space on its Mill Street property at the point of delivery to accommodate the City's oil switches and protective equipment and the City shall furnish free to the Vendor suitable space thereon to accommodate the current and potential transformers and protective devices which the Vendor shall install in connection with its instruments.

(c) It is mutually agreed that the accounts for power hereunder shall be based and the accounts paid upon the average of the readings of the instruments owned by both parties with the provision if one of the sets of such instruments

is out of service that the accounts shall be found and paid upon the readings from the remaining set of instruments and, further if both sets of instruments are out of service it shall be assumed that the measurement for any period is the same as last recorded for the same period of the same last preceding day or days.

14. The Vendor and the City at all times shall each have the right to suggest their instruments and if the same are found defective or if they desire for any reason they may at any time repair and replace them at their option.

15. The City and the Vendor shall each have the right to demand and immediately thereafter there shall be an inspection of all or any one or more of the instruments in the presence of the representative of the parties, to determine their accuracy. It being understood that reasonable written notice of such desire shall be given, and that such demand shall not be made oftener than once in each three months. In case the instruments thus tested are found to be inaccurate by more than 1% the cost of such test shall be borne by the party whose instruments are found to be inaccurate and the necessary adjustments in the accounts for power delivered for a period of not exceeding six (6) months prior to the test shall forthwith be made by such party to the other party. If the instruments thus tested are found to be accurate within 1% the cost of such such test shall be borne by the party requesting such test and the adjustment in accounts for power delivered shall be made.

16. In the event of the City taking a maximum load up system of load adjustment for horsepower due to errors of adjustment or operation of the machinery at the Vendor's or the Company's or the City's power plants, the Vendor shall notify the City immediately of such errors and the respective proper parties hereto shall take immediate steps to remove the cause or causes of such incorrect adjustment of operation. Any such errors load due to incorrect adjustment of operation which the City takes prompt steps to remove shall not constitute a basis for a change in power or excess of that which the City is obligated to pay but for any errors load which the City may take which is due solely to errors of adjustment or operation of the machinery of the City's plant and which the City does not take steps immediately to remove the Vendor shall be at liberty to discontinue the delivery of service hereunder until the City agrees to cease taking such errors load or to continue to deliver such errors load to the City during the remainder of the billing period in which such error load the city shall pay the Vendor for such errors load on the basis of its delivery of unit load factor for the billing period only in which it is so taken at the same rate as set forth in article 1 hereof. The City shall not be asked to remove errors load if the general frequency of the corrected systems exceeds 99% cycles per second.

8. Interchange of Power

In order to be of mutual assistance during emergencies, each party agrees, at the written request of the other party,

(a) To supply to the other party subject to withdrawal at any time such temporary hydro electric power as the other party may desire to purchase and as the requested party may be willing to deliver. The Vendor for the period only in which it may take such power agrees to pay the City for the net kilowatt amount of power so received at the net rate of 2.00 cents per kilowatt hour.

(b) To supply to the other party not subject to withdrawal during the definite period in which it is requested such temporary hydro electric power as the other party may desire to purchase for a definite period of not less than one calendar week and as the requested party may be willing to or deliver the terms of supply and of payment for such temporary power to be in accordance with those set forth in paragraph a immediately above but with the provision that payment for such temporary power shall be based upon its delivery at unity

Winn-Peopse or the Winnipeg River

load factor for no shorter period than the definite period for which the request is made.

(c) To supply to the other party subject to withdrawal at any time such steam generated power as the other party may desire to purchase temporarily and as the requesting party may be willing to so deliver. The receiving party agree to pay to the requesting party for such steam generated power the price of one and one-half cents per kilowatt hour plus a service charge of two hundred and fifty dollars (\$250) for each occasion on which the requesting party brings its steam plant into operation for such delivery of power.

(d) The City agrees that it will not request the supply of such temporary power as provided for under paragraph (a) or (b) of this article unless it is then purchasing the maximum amount of power as provided under the terms of this contract and for the period only in which it may take such temporary power. The City agrees, in addition to the amount then payable to the Vendor for the maximum amount of power to pay to the Vendor for such temporary power as received at the net rate of 1.46 cents per kilowatt hour.

9. City's Right to Develop Slave Falls

The Vendor and the Company hereby jointly and severally covenant and agree with the City that they will not nor will either of them interfere in any way whatever with the City's right to develop Slave Falls on the Winnipeg River and hereby admit that Slave Falls has been reserved by the Dominion Government for the City and that neither the Vendor nor the Company will in any way seek or directly or indirectly do anything to prevent the City from obtaining the right to develop Slave Falls.

10. General Provisions.

(a) The word "day" whenever used in this Agreement shall be construed to mean a period of twenty-four (24) hours beginning twelve o'clock midnight and ending at twelve o'clock midnight twenty-four (24) hours later the word "month" whenever used in this Agreement shall be construed to mean an average calendar month of three hundred and thirty (330) hours the words "contract year" whenever used in this Agreement shall be construed to mean one year from September 1 to the following August 31 and the phrase "unit annual load factor" used herein shall be construed to be the ratio of the maximum or any greater quantity of kilowatt hours to be purchased by the City in any contract year to the total kilowatt hours resulting from the continuous use during each contract year of the maximum horsepower for each contract year as set forth in article 3 hereof or any greater amount of horsepower taken by the City in such contract year.

(b) In case the Vendor shall be prevented from delivering electric power or in case the City shall be prevented from receiving or using electric power by reason of strikes not fire lightning strikes, explosion, Act of God or the King's enemies, or by any other cause reasonably beyond the control of the party prevented then the City shall not be obliged to pay for such power during the period of such interruption and the Vendor shall not be obliged to deliver power during any such period but nothing herein contained shall be construed as permitting the Vendor or the Company to refuse to deliver or the City to refuse to receive the power as soon as the cause of the interruption is removed, and each of the parties hereto shall be prompt and diligent in removing and overcoming such cause or causes.

(c) It is agreed that defaultness in the amount to be paid for energy purchased under the terms of this contract shall be made at the contract price for all interruptions in proportion to the period of interruption.

(d) The City shall save the Vendor and the Company harmless from any and all loss or damage sustained and from any and all liability to any person, firm

or corporation incurred by the Vendor or the Company by reason of any negligence on the part of the City or officers, agents or employees in constructing or operating the works of the City or any machinery or appliances used in connection therewith.

2. The Vendor and the Company shall save the City harmless from and against all loss or damage sustained and from any or all liability to any person, firm, or corporation incurred by the City by reason of any negligence on the part of the Vendor or the Company: their officers, agents, or employees in constructing or operating the works of the Vendor or the Company or any machinery or appliances used in connection therewith.

3. In the event of disagreement or dispute between the Vendor or the Company and the City on matters relative to the operation of the Vendor's or the Company's equipment or the general maintenance of works transferred by the Vendor to the City, or in other matters pertaining to the joint operation of the City's and the Vendor's or the Company's plants, or otherwise arising out of or in connection with this agreement, and the matters affected thereby it is agreed that these matters shall be settled by negotiation of the Managers of the Vendor and the Company on the one hand and the Hydro Electric System of the City on the other hand. Upon failure on the part of the said Managers to reach a mutually satisfactory agreement such matters shall then be decided by arbitration. Provided that this paragraph shall not prevent either party to whom any use of force shall at any time be due under this contract, from recovering same by due process of law.

4. Whenever in this Agreement any question is to be referred to arbitration, the question or dispute shall be referred to a Board of Arbitration to be composed of three persons one to be named by the first and third parties herein on the one hand, one to be named by the second party herein on the other hand and the third to be named by the arbitrators so appointed and in the event of their for thirty (30) days failing to appoint or not being able to agree upon the third arbitrator each third arbitrator shall upon the application of either party herein be appointed by the Chief Justice for the time being of the Court of Appeal for Manitoba. In case either party should for thirty days after notice by the other party in writing to appoint an arbitrator fail, refuse or neglect to do so, then the arbitrator for such party shall be appointed for the party so failing, neglecting or refusing by the Chief Justice for the time being of the Court of Appeal for Manitoba. The decision of such arbitrators, or any two of them, shall be final and binding upon the parties herein.

5. It is hereby mutually agreed between the parties herein that existing terms contracted shall apply or be deemed to apply or be intended to apply upon any or either of the parties to this Agreement any new or other rights or privileges whatsoever other than those specifically set forth and contained in this contract.

Two witnesses shall be binding upon and shall assent to the terms of the measures and signs of the respective parties herein.

MANITOBA POWER COMPANY Limited
President
Secretary

THE CITY OF WINNIPEG

Mayor
Treasurer
Comptroller

THE WINNIPEG ELECTRIC COMPANY
President
Secretary

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WINNIPEG RIVER

REPORT ON PINAUA-SEVEN SISTERS REACH

PIRENE-SEVEN RIVERS SCHEME

Province of Manitoba,
Office of the Premier
6th February 1933.

Dr T. H. Blom,
Chief Hydraulic Engineer,
O. H. E. P. Co.,
Toronto, Ont.

Dear Sir:

In accordance with the conference held in my office this morning between J. W. E. Chubb yourself and the undersigned, at which consideration was given in connection with the question now obtaining on the Pirene-Seven Scheme much of the Winnipeg river we desire you to proceed with the preparation of a report on the complete utilization of the power resources of this portion of the river having in mind the possible necessity of the Province of Manitoba taking over all rights lands and plant of the Winnipeg Electric Company on the Pirene channel and the lower Seven Rivers power site.

Your report should embody a complete analysis of the power resources of the two reaches and of the best means of securing their economic development, having in mind the desirability of obtaining the maximum utilization of the river's resources in the Seven Rivers reach and the most advantageous policy for the Province to pursue in bringing this about.

Your report should cover all phases of the problem and will necessarily entail a full consideration of the following questions:

- 1) Estimates of cost of development of power at (1) the Upper site of the Seven Rivers Falls; (2) the Lower site and (3) the two combined in one development—all three on the assumption that the present Pirene plant continues in operation.
- 2) Estimates of cost of development at (1) the Upper site (2) the Lower site and (3) the two combined in one development—on the assumption that the present Pirene plant be closed and the waters of the Pirene channel diverted to the Seven Rivers channel.
- 3) Estimates of the annual cost per horsepower under above questions 1 and 2.
- 4) Estimate of future load demand requirements of the Province's hydro system. In this connection we will supply you with data and estimates prepared by the Manitoba Power Commission.
- 5) Estimate of cost of transmission lines from Seven Rivers site to Winnipeg.
- 6) Estimate of the cost of transmission lines and equipment to deliver the equivalent capacity of the present Pirene plant from a new Seven Rivers development to the present transmission system of the Winnipeg Electric Company.
- 7) Estimate of the cost of expropriation of the Winnipeg Electric Company's rights, lands and plant on the Pirene channel and the Lower Seven Rivers power site.
- 8) Estimate of the present cost per horsepower of producing power at the Pirene plant.
- 9) Estimate of probable requirements for power in Winnipeg and Manitoba above what will be produced at end of next two years.

The questions outlined are to be a guide in your analysis and we expect that you will give due weight to all factors entering into the problem in order that we may have available all essential data necessary to a proper economic understanding of the Province's position.

We desire you to proceed as expeditiously as possible in the preparation of the above report.

Yours very truly,

JOHN DODDINGTON

THOMAS H. HOOQ—Hydraulic Engineer

"The Highlands"
Pinewood Avenue,
York Mills, Ont.
March 15, 1933.

Honourable John Bracken,
Premier,
Province of Manitoba,
Parliament Buildings,
Winnipeg, Man.

Dear Sir

I have the honour to transmit herewith a report on the Winnipeg River in accordance with the instructions outlined in your letter of February 6th, including answers to the specific questions set forth therein.

I have the honour to be,

Yours truly,

T. H. HOOQ,
Consulting Engineer

INTRODUCTION

This report deals with the power possibilities of the Pinawa-Severn System reach of the Winnipeg River, and its relation to the power situation in the Province of Manitoba. It also includes estimates of the cost of carrying out the necessary development works to make available the energy of this portion of the river. In addition, it reviews the power resources of the Winnipeg River as a whole and the importance of these most valuable natural assets to the Province. Finally, certain views and conclusions, as a result of the study of this data, are enunciated, and suggestions concerning a possible mode of action on the part of the Provincial Government are given.

In preparing this report, the information gathered and made available by the Dominion Water Power and Reclamation Service, relating to the Winnipeg River watershed, has been of very great value. The nature of the investigatory work carried on by this Service is worthy of comment.

GENERAL

Briefly, in 1911, the Department of the Interior began systematic investigation of the Winnipeg River watershed, and at that time initiated surveys of the power reach lying within the Province of Manitoba. With these surveys as a basis, a series of studies was made to determine the best method of developing that section of the river, having in mind the desirability of utilizing to the fullest possible extent the potential power resources which were to be found there. At that time power development in the Province was in its infancy, although there was ample evidence that the development of hydro-electric power was a live question. The inauguration of these surveys and investigations had for its object the placing of authentic and reliable information in the hands of the Department which was charged with the administration of these natural resources. It was felt that, in order that the full potential power of the river might be ultimately realized, some comprehensive scheme of development should be worked out so that information would be available which would enable the Department to prevent exploitation of sites whose development would be detrimental to a full utilization of the head available on the river. The results of this investigation were presented

Proton-River Storage Study

is dealt in Water Resources Paper No. 1, which was published in 1914 under the title of "Power and Storage Investigations of the Winnipeg River". It was determined that the full potential power of the river could best be developed at eight sites. Layouts were made together with accompanying plans and estimates, from which the comparative possibilities of each site was determined. While under present day conditions the cost of developing any water power has been considerably increased over those estimates for the different sites were all on the same basis using exactly the same unit price, a direct comparison of the different sites on the basis of capital cost is possible.

At the time that the surveys were begun studies of the upper watershed in Ontario were initiated for the purpose of determining to what extent low water conditions on the river might be bettered. These studies narrowed down to the consideration of two major storage projects viz. Lake of the Woods and Lac Seul. At that time the question of regulating the level of the Lake of the Woods was before the International Joint Commission. The Department at once took up the question of securing storage on the lake with the result that a treaty was negotiated with the United States, under the terms of which the necessary storage was secured for the conservation of water and the maintaining of a regulated flow in the Winnipeg River.

With regard to Lac Seul, the Department carried out surveys of that basin in 1914 and extended themselves up to the value as a regulation basin and effect upon the water power of the Winnipeg River. Recently an agreement has been reached between Ontario, on the one hand and Minnesota and the Dominion Government on the other which provides for the creation of storage on that lake.

These two storage schemes will increase the dependable flow of the Winnipeg River from 11,000 second feet in the state of nature to between 20,000 and 25,000 second feet.

The fact that the physical data collected by the field organizations and the results of these studies are available has had a great deal to do with the presentation of this report in the brief period available.

MANITOBA

Manitoba, with an area of over 300,000 square miles, is well endowed with a variety of natural resources. The Province may be divided roughly by a line commencing on the international boundary near Lake of the Woods and extending in a north westerly direction through Lake Winnipeg and to the Saskatchewan boundary into two great areas each with characteristic peculiarities. The area lying south and west of this line forms part of the great central continental plain, the land being particularly well adapted to agriculture although it varies from the well wooded country to be found in the north western section to the open prairie of the south. It has been estimated that there are 20,000,000 acres within this section suitable for agriculture of which some 15,000,000 acres are irrigated and 5,000,000 acres are improved from which food crops produced in 1920 were valued at \$120,000,000. The power, wind of this part of the Province is not great and the rivers and streams having low gradients with a widely variable flow do not lend themselves to the production of power. The area east and north of the dividing line has within the great Laurentian Plateau and it is in this north rough, less wooded area, but the quartz, gold and water power resources of the Province are to be found. In the north central section of the Province are found the great lakes of Manitoba, which are collecting basins for the drainage of the southern half of the three prairie provinces parts of North and South Dakota and Minnesota, and nearly the whole of Ontario west of Lake Superior. Lake Winnipeg with its tributaries the Saskatchewan, Red and Winnipeg Rivers, and including that of Lakes Winnipegosis and Manitoba, receives the drainage from an area of 600,000 square miles. The Nelson River forms

the outlet of Lake Winnipeg and is one of the important rivers of the continent. Potentially it is one of the greatest power sources of the country rivaling the St. Lawrence in this respect. To the north other rivers of importance from a power standpoint are the Churchill and Ray rivers, which flow directly into Hudson Bay.

Although the actual natural production of Manitoba is at present negligible, potentially it stands high among the other provinces of the Dominion. We are rapidly coming to realize the great geological treasure known as the Laurentian shield which surrounds Hudson and James Bays. In those parts lying in Quebec and Ontario great natural development has already taken place. Quite recently Manitoba has come into the limelight with the definite opening up of such areas as Pike Flats and Alberton (Jordan) to the north and those of the Rice Lake area to the south-west. Fortunately splendid sources of water power are to be found in the vicinity of the mining areas so that development should not be delayed through lack of adequate and cheap power.

Regarding the pulpwood areas the northern and eastern sections have resources which have not been adequately estimated. So far the development in Manitoba in this respect has been confined to that of the Manitoba Pulp and Paper Company. It is only reasonable to expect that a development of this industry may be looked for when sources of cheap power adjacent to the wooded areas are available.

WATER POWER RESOURCES

In the aggregate the water power resources of Manitoba amount to a large total. They have been estimated by the Dominion Water Power and Reclamation Service to be 1,260,000 horsepower at ordinary maximum flow or 1,244,000 horsepower ordinarily available for six months in each year. Of this amount 226,125 horsepower has been developed to date leaving well over 1,000,000 horsepower based upon maximum flow still available for development. Of this 1,000,000 horsepower over 1,200,000 is to be found in the Nelson River. At Grand Rapids, near the mouth of the Redriversforks from 50,000 to 100,000 horsepower may be developed while the Churchill to the north has potentialities amounting to nearly 600,000 horsepower. The tributaries of Lake Winnipeg entering from the east, are not in the class of the rivers mentioned, with the exception of the Winnipeg, but they have power possibilities totalling 140,000 horsepower based upon six months flow.

WINNIPEG RIVER POWER RESOURCES

From the standpoint of present power requirements in the Province the Winnipeg River is of prime importance. It forms a tributary of Lake Winnipeg, entering that body of water from the south-west. Rainy Lake and Lake of the Woods which lie along the international boundary in the province of Ontario, form the head-waters and together with a great many lakes of lesser size act as retarding and storing basins. Lac Seul at the head of the English River is also a lake of considerable magnitude and acts as a natural retarding basin for the flow of the English River. In consequence the discharge of the Winnipeg River is fairly uniform and while the drainage basin, which is 55,500 square miles in extent is small compared with that of the Redriversforks the discharge is much more uniform and the dependable flow available for power is actually greater.

Between the Manitoba-Ontario boundary and Lake Winnipeg there is a fall of 271 feet of which 246 feet may be concentrated at eight power sites. Lake of the Woods is at present operated as a storage basin. Tunnels in construction with the storage to be created on Lac Seul, it has been estimated that a flow of 12,000 cubic feet per second may be expected. This would give a continuous output of between 200,000 and 300,000 horsepower.

POWER-DRIVE DRIVE RIVER

On account of the Wenzang River being situated so close proximity to the great large centers of population in the Province it has a very marked effect on the development of the country. On the right bank there are at present developed and have a constant population capacity of 25,000 horsepower. There are Ponds in this area and operated by the City of Wenzang. Ponds, which by the Wenzang Electric Company and Great Falls, the Manitoba Power Company's development.

The remaining undeveloped ones are Upper Ponds 25 feet high, Upper Ponds 115 feet high, Upper Drive Ponds 25 feet high, Lower Drive Ponds 25 feet high, McArthur Ponds 15 feet high, and Four Ponds 27 feet high. The estimated possible output from the undeveloped sites on the right river amounting to 200,000 horse power feet per second is 100,000 horsepower. These sites are not all open for power, owing to circumstances which various parties have with the Department of the Interior of the Dominion Government. These Ponds and of Upper ones have been set aside for the use of the City of Wenzang. This is a highly desirable of that point where the proposed hydroelectric dam forms the left bank of the Ponds in this point and the river can be operated to maximum advantage. Regarding Lower Drive Ponds it is understood that the Wenzang Electric Company wants lands abutting on the river in the vicinity of Lower Drive Ponds and has paid them about \$200. This land was acquired prior to the date of the passing of the Dominion Water Property Act and hence may give the Company certain rights in the power on this section of the river. Four Ponds are which is the second one on the river being within a short distance of Lake Wenzang has been disposed of previously by an agreement with the Manitoba Pulp and Paper Company. The Company has been given no right in which to undertake development of that site but if by the end of that period the work has not been commenced, the site will be thrown open for other disposal.

From the foregoing it will be seen that actually there are over three sites on the river at present open for development. These are Upper Ponds, Upper Drive Ponds and McArthur Ponds, and of these Upper Ponds is not attractive on account of the fact that it is situated in the district which forms the headwaters of the Wenzang Electric Company's plant and, in addition, is only capable of producing about 1,000 horsepower.

RUN-OFF AND REGULATION

Conditions in the Wenzang River basin with regard to run-off are especially favorable viewed from the standpoint of power development. The total drainage area of the Wenzang River above Upper Ponds which point is about a mile and one-half above the diversion site of the Wenzang Electric Company is 25,000 square miles.

Practically the whole of this drainage area has the typical characteristics of the Laurentian country being rough, fairly high and well wooded. The rivers are generally in the nature of a series of ponds or basins separated by short sections of rapids flowing channels in which the major part of the stream energy is the form of water rapids or falls. There are also extensive lake systems and gulches which act as storage basins and have a marked effect upon the natural flow of the river.

It is not possible to measure the area of all the lake ponds etc. but it is interesting to note that over one hundred of them, varying in size from a few square miles up to 100 square miles in area, have been measured and these have a total combined area of nearly 1,000 square miles, that is nearly 4 per cent of the total drainage area.

The English River which is the principal tributary of the Wenzang, has a total drainage area of 11,075 square miles. Its first the largest lake on that drainage basin, has an area of 100 square miles. It has a tributary area of 11,100 square miles and is drained directly by the English River.

Including the English River drainage, the Winnipeg River has a drainage area of 22,278 square miles, of which 20,200 square miles lies above the outlet of Lake of the Woods. Other lakes of importance in that area are Rainy, Nipigon, Le Croix and Vermilion Lakes. Under natural conditions their combined effect was to maintain a fairly uniform flow in the Winnipeg River while, now that the most important of them are used as storage basins, the fluctuations will be reduced and a discharge approaching mean flow will be maintained.

The hydrological records for the drainage area of the Winnipeg River are very complete and cover the period from 1897 on. In the case of Lake of the Woods, records of lake levels are available for a much longer period, although continuous records of discharge do not extend beyond 1897. On the English River records of discharge and lake elevations have been secured since 1913, so that complete records for both branches of the Winnipeg River are available about that time.

These records have been the subject of intensive study by the Dominion Water Power and Reclamation Service in connection with the development of the Winnipeg River for power and the regulation of Lake of the Woods and Rainy Lake.

The results of these studies appear in Water Resources Paper No. 3, where it is shown that a regulated flow of 20,000 cubic feet per second may be maintained, and this flow was used in deriving the power output of the river.

More recent investigations, which include the Lac Seul regulation, lead to the conclusion that the figure of 20,000 may be raised to 22,000 cubic feet per second, with reasonable assurance that such a flow may be maintained, except during very exceptional seasons, as in 1904 and 1913, when it would have been impossible to secure a regulated flow of more than 17,500 cubic feet per second. For this reason, in the present studies the probable power output of the River's Reach has been based upon a regulated flow of 22,000 cubic feet per second.

POPULATION OF MANITOBA

The estimated total population of Manitoba, as of June 1926, based upon records of the Dominion Bureau of Statistics, was 440,000 of which 200,000, or 45 per cent, formed the urban population, the remaining 55 per cent being distributed in the rural districts and small villages. By far the greater proportion of the population is to be found in the southern and south-western sections of the Province. Of the total urban population, 250,000, or 83 per cent, is to be found in the City of Winnipeg and the immediately adjoining municipalities (see table 1).

TABLE 1

City, Town or Village	Population
Winnipeg	181,500
St. Boniface	14,107
Selkirk	4,301
Truroville	2,316
Tuxedo	717
St. James	12,070
St. Vital	7,400
East Kildonan	7,613
West Kildonan	1,600
Brooklands	2,415
Total	251,713

The remaining urban population is to be found in a number of municipalities which range in size from 100 or 200 up to over 10,000.

PINAUA-RIVER POWER BASIN

In the section of Manitoba, being considered, out of a total population of over 270,000 concentrated in the cities, towns and villages, about 225,000 is to be found in the larger communities, leaving about 45,000 distributed among the smaller towns and villages. The population in and adjacent to Winnipeg is served by two systems, that of the Winnipeg Municipal System with power generated at Pointe du Bois, and by the Winnipeg Electric Company from its Pinawa plant and that of its subsidiary, the Manitoba Power Company at Great Falls. These organizations serve Winnipeg, and St. Boniface and practically all of the surrounding communities, as Selkirk, Stonewall, Transcona, Headingly, St. James, etc. (See Table I)

The Manitoba Power Commission's system, which at present serves the towns of Portage la Prairie, Oakville, Carman, Sperling, Jordan, Roland, Morden, Crystal City, Swan Lake, Rathwell, Holland, Carlingford and Glenboro, and rural customers with Winnipeg River power has in operation about 300 miles of transmission lines, and reaches a population of from 10,000 to 15,000. This system also operates fuel stations in the towns of Minnedosa and Virden, having a combined population of about 3,000.

There are some nineteen urban municipalities, having a total population of about 30,000, which are served by municipal or commercial fuel stations. These are shown in table II.

TABLE II

Town	Population	Town	Population
Brandon	15,443	Rivers	829
Boisvein	788	Russell	824
Carberry	800	Souris	1,613
Dauphin	2,530	Swan River	900
Emerson	744	The Pas	1,025
Gladstone	853	Gretna	531
Hartney	631	Shoal Lake	779
Killarney	301	Winkler	871
Melita	649		
Neepawa	1,833	Total	35,879
Rapid City	813		

POWER REQUIREMENTS

It is evident that the largest power markets are at present adequately taken care of and, with the reserve capacity which is available at Great Falls and the Slave Falls site, which the City of Winnipeg controls, the growth in load in the area served can be taken care of for some time to come.

At present the district adjacent to the Winnipeg River is being provided with power by three organizations: first, the Winnipeg Electric Company, which company operates its own plant on the Pinawa channel and obtains a further supply of power from its subsidiary, the Manitoba Power Company, which owns and operates the Great Falls plant, second, the Winnipeg Municipal System, whose source of power is the Pointe du Bois plant, and third, the Provincial Power Commission, which purchases power from the Winnipeg Municipal System and distributes it to the rural and urban consumers.

In 1928 the net output from the three concerns totalled 397,195,000 kilowatt hours, of which 3,681,000 kilowatt hours was distributed by the Manitoba Power Commission. The bulk of the power produced by the plants is used to satisfy the load demands of the City, which are to a great extent of a domestic and commercial nature, although the industrial load of the grain elevators, cement plants, pulp and paper mills, etc., accounts for a very fair proportion of the consumption.

From the foregoing it is apparent that the Manitoba Power Commission must look to rural districts and smaller communities for future expansion of its system, with an expected industrial load to go. There are similar districts in Ontario in which the rural, urban and industrial power requirements are met by the one distribution system. The St. Lawrence system is a fair example of such a case, and may be used to measure the probable load and growth to be expected for the district served by the Commission. This system covers a district in which there are villages and towns ranging in population from 500 to 2,000 and totaling 15,000. In 1931 the peak load on the system, including various industries with which industrial companies are closely linked, was 1,000 horsepower or 0.25 horsepower per person. Using a figure of 0.25 horsepower the population of persons served by the Manitoba Commission would require 1,000 horsepower on the peak in 1931.

The load growth is perhaps more difficult to forecast, but from a study of the trends of systems serving similar territory the assumption of an annual increase of 1 per cent seems reasonable. At this rate the load would double itself every ten years, following a load of 1,000 horsepower in 1931 2,000 horsepower would supply the demand for the next thirty years.

The future demand for power in the Province will be divided between the growing needs of the manufacturing of goods served by the different joint producers and the requirements of mining, pulp and paper and other industries. This second class of power users will undoubtedly require the largest blocks of power and owing to the physical features of the country they will in all probability be located in the northern and north-western sections of the Province, where they can secure power from either the Churchill or Nelson River area, or from the smaller rivers tributary to Lake Winnipeg. This will leave the Winnipeg River joint area to serve the areas adjacent to and south of that river.

If we use the Niagara system of the Hydro-Electric Power Commission of Ontario as a basis to determine what might be expected from the full development of the Winnipeg River in relation to population served, we have the following figures:

In December 1927 the load served in the area covered by the Niagara system was 250,000 horsepower serving a population of 1,250,000, or 0.25 horsepower per capita. On the same basis and assuming a load factor of 50 per cent, the output from the Winnipeg River power area would be 250,000 horsepower capable of serving a population of 1,250,000. In other words, the power from the Winnipeg River is quite capable of meeting the power demands of a number of highly industrialized communities having a combined population of two and a half times that of the present population of Manitoba.

In pointing out the possibilities of Winnipeg River power in the future and the population that may be served it should be recognized that such an intensive use of the power is based upon the assumption that power large users of power such as the pulp and paper industry may have to seek other sources of power if they may be served in areas where the use of power is high and not act as a handicap on the industrial growth of the country. In other words as the population grows the power will become too valuable to be used by the home industries. An example of such a tendency is to be found in the government of the Aluminum Company's Plant from Montreal, in New York State, to Arvida, in Northern Quebec.

SITUATION IN SEVEN SISTERS RIVER

What is known as the Seven Sisters reach is that part of the main branch of the Winnipeg River which extends from the head of the Pigeon channel to Lac du Bonnet. The plant of the Winnipeg Electric Company on the Pigeon channel was the first hydro-electric development in the Province. Advantage

one taken of an old high water channel to divert water from the main river and deliver it to a point where a head of about 40 feet could be developed. The diversion is effected by means of a rock fill dam, placed across the main river channel and two auxiliary dams which restrict the flow in the auxiliary channels. The Company is permitted to divert an average flow of 8,000 cubic feet per second, and have equipment installed in their Flaming plant sufficient to develop 17,000 horsepower. The water so diverted is returned to the main river in the regular stream at Lac du Bonnet. This diversion of flow has an important bearing on any development that may be undertaken on the north of the main river since the contemplated flow would be reduced to 14,000 cubic feet per second.

The total fall in the Flaming channel and the seven basins reach under proposed regulated levels is 75 feet. Of this the Company originally developed 20 feet. Since the plant was placed in operation, the headworks have been raised from time to time and a present head has been increased to 42 feet leaving 20 feet undeveloped in the Flaming channel of which about 10 feet occurs above the plant. It has been proposed to develop 10 feet of this fall at a point located about three and a half miles above the Company's plant and just at the lower end of a section of channel which has caused the Company considerable operation trouble in winter.

A development at the point proposed would add about 16,000 horsepower to the power output of the channel and would not interfere in any way with the present Flaming plant. It would undoubtedly very materially reduce if not entirely eliminate the winter operating troubles at present experienced.

When the Upper Flaming site developed, there would still remain 11 feet of undeveloped fall. Of this, at least 3 feet occurs between the two dams, and the remaining 8 feet between the tailrace of the Company's plant and Lac du Bonnet.

The seven basins reach has been so designated from a series of seven rapids and falls which occurs between the head of Flaming channel and Lac du Bonnet. Two reconstructions of the fall in the reach are proposed. The upper one called Upper Seven basins would embrace the first and second falls having a combined drop of approximately 10 feet and the fall concentrated at the Winnipeg Electric Company's diversion weir giving a total head of 20 feet. The proposed site is located just below the crest of the second fall where excellent foundation conditions exist. The river banks are not quite high enough to hold the water at the level proposed so that a series of low dykes, extending upstream about one-half mile, would be required.

The lower reconstruction would be about 4-1/4 miles downstream from the upper one and would concentrate from 17 to 40 feet of the remaining fall.

Assuming a regulated flow of 12,000 cubic feet per second there would be 4,000 cubic feet per second available in the main channel which would give a total continuous output of 16,000 horsepower, 10,000 horsepower being from the upper site and 6,000 horsepower from the lower site.

It has been suggested that the total fall might be concentrated at the lower site. This however is not possible since raising the headwater to elevation 880 would not only involve flooding up the Whitemouth as far as the Canadian Pacific Station, a Whitemouth and probably require raising of the bridge at that point, but in addition would cause a great amount of flooding below up south of the Whitemouth and would require very heavy dykes along the Winnipeg River. However, by going upstream to a point above the Whitemouth River it is possible to concentrate the fall at one development although it would involve heavy left-bank excavations.

On the Flaming channel the total head which may be developed, including the Upper Flaming site is 60 feet, while on the main channel, from 40 to 45 feet may

Pineau-Deser Swamp River

No. 10000 Date, 1938

be utilized out of a total of 75 feet. The Whiting Electric Company is entitled to divert from the main stream an average of 8,000 cubic feet per second. This would give a continuous output of 60,000 horsepower from the big pipe. While it would be feasible to divert the 7 pipe Poudre site it is doubtful whether it would be satisfactory except in the remote future on account of the small amount of power which would be made available. In this connection the output from the Poudre channel has therefore been taken as 50,000 continuous horsepower.

The physical features of the Whiting River make it especially adaptable to the operation of a series of plants. The river instead of being in the nature of a channel of fairly uniform section with what appropriate uniform flow is made up of a series of fairly broad pools of considerable depth separated by short swift flowing rapids. The presence of these pools will enable the plants to be operated under a fairly low head faster without interfering with the plants immediately above or below. The pondage which would be created by a development at the Upper Seven Sisters site would have an area of 1,676 acres. This would permit increasing the installed capacity of the plant over that warranted by a regulated flow of 22,000 c.f.s. When pondage is available an increase of from 25 to 50 per cent is common for plants generally. With the pondage available the higher figure might be used which would mean an installation of 60,000 horsepower at the upper plant.

If the 8,000 cubic feet per second of power is diverted into the Poudre channel were returned to the main channel it would develop 40,000 continuous horsepower under a 60-foot head. This is an increase of 10,000 continuous horsepower over that secured by using the water in the Poudre channel. On the basis of commercial power this might be increased to 45,000 horsepower.

Experience in operating hydro electric plants points conclusively to the fact that it is impossible to get water as efficiently as one or more plants as it is to run separate where such plants are operated independently. In the case of two plants one of which is operated on the Poudre and the other on the main channel there would necessarily be a loss of power or an inefficient use of the water than if the other flow was developed in the Seven Sisters reach. It is hard to estimate what this loss of power would be but certainly it would be a very appreciable amount. In this regard the stream of 60,000 horsepower due to developing the whole flow of the river under the total head, in the main channel, would be still further augmented.

Coming now to the series of questions which were submitted in the letter of introduction dated February 28th, 1938, they are answered specifically as follows:

Question. Estimates of cost of development of power at: I. the Upper site of the Seven Sisters Falls. II. the Lower site of the Seven Sisters Falls and III. the development of the total fall at one site. The estimates under the above three headings are made on the assumption that the Poudre plant is continued in operation.

Answer to Question I. The cost in each case includes the capital cost of the development, step-up equipment, transmission to Whiting and delivery at that point of high tension power. The quantity of power delivered at Whiting in each case is the net amount after correction for all losses from the point of generation to the point of delivery.

- | | | |
|---|---|--------------|
| I | (a) Upper site, Seven Sisters—
complete development—41,000 H P | \$ 5,200,000 |
| | (b) Upper site, Seven Sisters—
initial development—21,700 H P | \$ 4,200,000 |

PINAWA-SEVEN SISTERS RIVER

II	(a) Lower site, Seven Sisters— complete development—80,000 H.P.	\$10,520,000
	(b) Lower site, Seven Sisters— initial development—30,000 H.P.	\$ 4,215,000
VII	(a) Combined development, Seven Sisters— complete development—150,000 H.P.	\$47,471,000
	(b) Combined development, Seven Sisters— initial development—53,000 H.P.	\$11,804,000

Question 2. Estimates of cost of development of power at (I.) the Upper site of the Seven Sisters Falls, (II.) the Lower site of the Seven Sisters Falls, and (III.) the development of the total fall, at one site. The estimates under the above three headings are made on the assumption that the Pinawa plant is closed down and all the water is used in the main channel.

Answer to Question 2. The cost in each case includes the capital cost of the development, step-up equipment, transmission to Winnipeg, and delivery at that point of high tension power. The quantity of power delivered at Winnipeg, in each case, is the net amount after correction for all losses from the point of generation to the point of delivery.

I	(a) Upper site, Seven Sisters— complete development—85,000 H.P.	\$12,088,000
	(b) Upper site, Seven Sisters— initial development—31,700 H.P.	\$ 6,630,500
II	(a) Lower site, Seven Sisters— complete development—130,000 H.P.	\$14,194,000
	(b) Lower site, Seven Sisters— initial development—30,000 H.P.	\$ 6,005,000
III	(a) Combined development, Seven Sisters— complete development—220,000 H.P.	\$28,270,000
	(b) Combined development, Seven Sisters— initial development—53,000 H.P.	\$13,177,000

Question 3. Estimates of the annual cost per horsepower under above questions 1 and 2.

Answer to Question 3. In the following tables are given the total annual cost per horsepower for power delivered in Winnipeg (at high tension) based on the capital cost given in answer to questions 1 and 2.

In the second table the annual costs, which arise from carrying the investment in the Pinawa plant, which is closed down are added to the annual costs for the complete development in each of the three cases, but not in the case of the initial developments, since the Pinawa plant would only be acquired when the water was needed in the main river.

(A) ANNUAL COST OF POWER DELIVERED IN WINNIPEG AT HIGH TENSION
Pulver Plant Operating Seven Years Reach

	Upper Site		Lower Site		Combined Development	
	Initial Development	Complete Development	Initial Development	Complete Development	Initial Development	Complete Development
Power Delivered	31,700 H.P.	65,000 H.P.	30,000 H.P.	90,000 H.P.	59,000 H.P.	180,000 H.P.
\$ Total Annual Cost	\$400,800	\$1,035,100	\$622,700	\$1,179,500*	\$1,245,000	\$3,919,000*
— Annual Cost per H.P.	\$126.72	\$15.46	\$20.75	\$13.10* + \$2.00	\$21.10	\$21.96* + \$2.00

*These figures must be increased by the annual carrying charges due to acquiring the Winnipeg Electric Company rights at Lower Seven Sites.

Note.—The figures given above for the annual cost of power for the complete development, namely, \$15.59, \$13.10, and \$11.96 represent the cost only if, on the day the respective plants are completed and ready for operation, full loads are available and the total revenue secured. Assuming a reasonable period for the plants to be completely loaded after being placed in operation, the capitalization of the deficient revenues during this period will raise the figure of \$13.10 by at least \$2.00, and the figure of \$11.96 by at least \$2.50.

(B) ANNUAL COST OF POWER DELIVERED IN WINDING AT HIGH TENSION
Pinawa Plant Closed Down—Seven Sevens Reach

	Upper Site			Lower Site			Combined Development	
	Initial Development	Complete Development		Initial Development	Complete Development		Initial Development	Complete Development
Power Delivered	21,700 H.P.	50,000 H.P.		30,000 H.P.	120,000 H.P.		50,000 H.P.	280,000 H.P.
Total Annual Cost	\$742,400	\$1,312,500		\$750,000	\$1,800,000		\$1,375,700	\$2,600,500
			Pinawa					
Annual Cost per H.P.	\$34.50			\$25.00			\$25.95	
Total Annual Cost including Pinawa	(a) \$1,957,500				\$2,187,500			\$2,196,500
	(b) \$2,392,000				\$2,312,000			\$2,320,000
Annual Cost per H.P.	(a) \$20.40				\$18.52			\$13.91 + \$2.00
	(b) \$22.52				\$19.22			\$15.32 + \$2.50

Note (a) Is on the basis of \$6,500,000 Capital Cost Pinawa Plant.

(b) Is on the basis of \$10,000,000 Capital Cost Pinawa Plant.

Note For the same reason given in the foot-note on page 24, the capitalization of the deferred revenue covering the development period of the load would increase the figures of \$13.91 and \$15.32 per horsepower by at least \$2.50.

Question 4. Estimate of future load demand requirements of the Province's hydro system.

Answer to Question 4. Based upon experience with a system serving both rural and urban customers, in a district similar to that served by the Manitoba Commission, in the way of distribution of population between the urban and rural communities and of similar size the demand would be about 0.43 horsepower per capita. The growth of load may be taken as 7 per cent per annum, doubling approximately every ten years. Using the figure of 1,150 horsepower as the load in 1930 on the Manitoba Power Commission's system, 35,300 horsepower would be required in thirty years.

Question 5. Estimate of cost of transmission line from Seven Sisters site to Winnipeg.

Answer to Question 5. This estimate is based upon a 66,000 volt, double circuit steel tower line with a capacity of 40,000 kilowatts, from Seven Sisters site to Winnipeg. Including right-of-way engineering, etc., the estimated cost of the transmission line is \$14,000 per mile.

Total length of line	40 miles
Total estimated cost	\$1,400,000

Question 6. Estimate of the cost of transmission lines and equipment to deliver the equivalent capacity of the present Pinawa plant from a new Seven Sisters development to the present transmission system of the Winnipeg Electric Company.

Answer to Question 6. Estimated cost of transmission line from Seven Sisters site to tie in with the Winnipeg Electric Company's line from Pinawa is as follows:

Double circuit, 66,000 volt, steel tower line, capacity 30,000 kilowatts—	
Estimated cost per mile	\$ 10,500
Total length of line	14 miles
Total estimated cost	\$147,000

Question 7. Estimate of the cost of expropriation of the Winnipeg Electric Company's rights, lands and plant on the Pinawa channel and the Lower Seven Sisters power sites.

Answer to Question 7. It has been assumed that the Province may take over the Company's plant on the Pinawa, buying it outright, closing down the plant, and using the water at present directed down the Pinawa, in the Seven Sisters reach, and selling the power therefrom, leaving the Company to make some other arrangement to replace the power in which case the cost would be as follows:

Capital cost of plant less depreciation	\$3,390,000.45
Capitalized value of annual net earnings plus water rights at	
7 per cent.	3,390,000.00
	\$6,780,000.45

The above is based on an assumed annual net return of \$350,000. This figure is used since there was no access to the Company's books. If the actual return varies from that amount, the above figures would require revision accordingly. The value of the water rights have been taken as equal to an annual charge of 60 cents per horsepower of peak capacity. A rate of 7 per cent is taken as a reasonable one for the return on an industrial investment of this character, and equal to the prevailing rate of dividend on sound preferred stocks.

Question 8. Estimate of the present cost per horsepower of producing power at the Pinawa plant.

Answer to Question 2. The Manitoba Public Utilities Commission in 1918 valued the Pimawas plant as follows:

Original cost of plant	\$1,094,994.04
Cost of transmission line (plant to river)	33,905.88
Additions to plant, 1915 to 1930 (actual cost)	143,708.08
Total original cost of plant, or capital investment	\$1,272,607.99
Installed capacity	57,500 H.P.
Average peak output (last ten years)	35,040 H.P.
Capital cost per installed horsepower	\$22.00
Capital cost per horsepower (peak power)	\$36.45
Annual cost of operation	
Interest, sinking fund and depreciation	\$304,000
Taxes and insurance	11,000
Operating costs and overhead	85,000
Total annual charges	\$399,999
Annual cost per H.P. (installed capacity)	\$18.96
Annual cost per H.P. (peak load)	\$10.56
Cost per kilowatt-hour (183,000,000 kilowatt-hours generated)	0.248c

Question 3. Estimate of probable requirements for power in Winnipeg and Manitoba above what will be produced at end of next two years.

Answer to Question 3. If we assume an annual rate of growth in load for the south central part of the province as 8 per cent., then the total load carried by these systems would amount, in ten years, to 843,000 horsepower. If we assume an annual rate of growth of 10 per cent., then the total load would amount, in ten years, to 771,900 horsepower.

It is very likely, with conditions to be expected generally in Canada and particularly in Manitoba, that the higher rate of increase can be looked for. It is, therefore, reasonable to anticipate that provision for a power capacity of at least 800,000 horsepower will be required by 1940.

RECAPITULATION

The foregoing part of the report has dealt specifically with the certain questions which were presented, while in the following sections are summarized the views which have presented themselves during the study of this whole situation. These relate more particularly to questions of policy, from the point of view of the Provincial Government.

In the development of the natural water resources of the Province the Government has a dual responsibility, first, to ensure that the maximum possible power output is derived from the potential power capacity and second, that this power output is made available to the consumer at the lowest possible cost.

The first of these requirements can be fulfilled equally as well by adequate supervision and control, as by the actual development itself with public moneys. The second phase of this responsibility, namely the rendering available of this power capacity to the consumer, requires very careful consideration.

To assist you in arriving at a decision in the problem confronting you, my views with regard to this dual responsibility are as stated below.

The immediate interests of the Province are more particularly concerned with the development and distribution of power to the consumers, who fall roughly

into three groups. First, the City of Winnipeg, second, the manufacturing, mining and pulp and paper interest of the Province and third, the farming and rural population.

The question immediately arises as to the best method for the Province to protect in the light of its responsibility from a financial and public standpoint, its claims on adequate supply of power of requirements and for those interests to protect their future growth.

With regard to the first group, the City of Winnipeg, it is evident that they are under private contracts adequately protected in the supply of power from the Public Co. lines plans. Their future requirements are also well secured to the Electric Public Co. and the possibility of acquiring a further source of power is the Province of Ontario. Therefore as far as the power requirements of the City of Winnipeg affect the situation, we need not consider any further.

The protection of adequate supply of power for the manufacturing, mining and pulp development of the Province as representing the second group is its immediate future requirement can be obtained by the expenditure of either government or private capital. As already pointed out any development of power by the Province to supply these industries, into its greater potential business risk, might not be justified on a present-day basis. This owing to the probability of their turning to a different source of power later consideration to enterprises with the Electric Public Co. supply is not of such prime importance as the farming group, namely the rural and farming communities who must draw their energy from the Winnipeg River.

It might be said, however, that the Manitoba Hydro Commission's future plans to secure to an adequate supply of power for distribution to the rural and farming communities of the Province. This could not be obtained in any way by development of power by the Province or by the purchase of power to fulfil those requirements.

The question of allowing private enterprise to proceed with the development of the various water resources of a country is the danger of forming a monopoly with monopolized rights controlled in effect by the enterprise. An effective means of protecting against resource rights a monopolization. In this respect the Province of Ontario has been very wise. It has a public owned power development and distribution system in the City of Winnipeg which is in a strong business position. It has a public owned distribution system in the province of development in the Manitoba Hydro Commission and it has private enterprise developing and distributing power in the more thinly populated part of the Province in the Winnipeg Electric Company. The factoring of these three organizations gives a very adequate protection to private enterprise power lines in the Province. In addition, the Province has the power of regulating rates and controlling private enterprise through legislation now on its statute books.

For the protection of the mining and pulp industries, the province of the St. Lawrence and Ottawa River power offers them the opportunity of development for supplying their own power needs if power from other sources are not sufficiently favorable.

Providing a financially sound scheme can be evolved whereby the Government can produce and transmit power to consumers on a basis which will be well supporting them it is positive that the proper solution of the problem which confronts the Province in the Electric Public Co. is a public owned development. The fact however should not be overlooked that a very large percentage of the present power-using population of the Province that is, in the City of Winnipeg and vicinity is now served, and a large percentage of

the power used in the Province is now developed and sold in this locality either by publicly-owned plants or plants which compete with them, so that any provincial scheme must affect primarily the rural and industrial consumers.

The figures presented in the early part of this report indicate very clearly the financial obligations the Province must assume if it should decide to proceed with the development of the Seven Sisters reach. Following are briefly reviewed the several alternative methods of procedure which present themselves.

First, there is the method which would entail the least capital expenditure on the part of the Province. With this in mind, the Province may secure the lease to the Upper Seven Sisters and proceed with a power development, leaving the Pinawa development of the Winnipeg Electric Power Company in operation.

As an alternative to the above the Province may secure the lease to both Upper and Lower Seven Sisters acquiring any existing rights or ownership in lands at these points, and proceed with a combined power development of the total head in this section, using the total flow of the river. Under this scheme it would be necessary to purchase the Pinawa development and eventually close it down.

It is understood that the Winnipeg Electric Company value their assets at \$14,000,000. For the purpose of this argument I have used a figure of \$4,000,000, on the assumption that the Province has the right of expropriation. If it is found after investigation that the Province lacks this power then the acquiring of the Pinawa plant and rights becomes practically impossible except at a cost which will make it prohibitive.

If the Province proceeds under the first method, the initial capital expenditure necessary for a development of the Upper Seven Sisters will be approximately \$4,140,000, and for the full development of this site, for the balance of the river flow remaining after Pinawa is supplied a total expenditure of \$9,301,000 will be required.

This initial expenditure would enable the delivery of 31,700 horsepower at Winnipeg at an annual cost of \$20.73 per horsepower provided the whole 31,700 horsepower were sold. With a possible load of 4,000 horsepower on the Manitoba Hydro Commission line in 1930 the annual cost per horsepower delivered to Winnipeg would be about \$133 per horsepower decreasing progressively as additional power is sold to a minimum of \$20.73 per horsepower as above.

The final expenditure of \$9,301,000 would enable the delivery of 66,000 horsepower at Winnipeg at an annual cost of \$15.00 per horsepower provided the whole 66,000 horsepower were sold.

Proceeding under the second method, the cost of an initial development which would concentrate the total head in one plant (Pinawa plant being eventually closed down) would require a capital expenditure of \$13,177,000 without providing the funds for acquiring the Pinawa plant or the Winnipeg Electric Company's rights at Lower Seven Sisters. Since the full flow would not be required for the initial development, it would not be necessary to close Pinawa at this stage.

This initial development would enable the delivery of 31,000 horsepower at Winnipeg at an annual cost of \$25.00 per horsepower providing all power were sold. For a possible load of 4,000 horsepower available on the Manitoba Hydro Commission's system in 1930, the annual cost would be \$275 per horsepower, and would decrease progressively to a minimum of \$25.00 per horsepower depending on the amount of power sold.

Power-Plant System Review

The best expenditure for the complete utilization of the full flow of the river would require a total of \$25,375,000 for the necessary works, and an additional \$5,000,000 for the Power's plant. If the Winnipeg Electric Company estimate is taken, this would be increased by \$18,000,000 for the upgrading of the Power's plant, giving a total of from \$43,375,000 to \$61,375,000 for the whole development. On this basis 250,000 horsepower would be available for delivery to Winnipeg at an annual cost of from \$11.00 to \$11.50, providing all power were sold. If a market for 100,000 horsepower only were secured, the actual cost per horsepower in Winnipeg would be \$21.38 to \$22.45.

The Winnipeg River in respect of its location and its power possibilities, represents one of the great natural assets of the Province. Its easily developed sites, its natural, uniform flow and the possibilities for increasing this flow by storage and its total head will make this river when fully used, an economic jewel of the first rank for Manitoba. Any thought of using the River, however else in any way but that which will bring forth all its latent possibilities would be an economic waste not to be tolerated.

To develop power on a river of the magnitude of the Winnipeg for a load of the size required to serve rural Manitoba even with the future prospects, is economically absurd. On the other hand were the Province to take over the power interest of the City of Winnipeg and the Winnipeg Electric Company and operate and extend their plants, the City of Winnipeg would not be likely to gain any advantage over their present position, nor would the outside situation. Therefore this large expenditure and responsibility would have been assumed by the Province for the saving of the differential between cost and purchase price of the relatively small amount of power used by the rural and suburban customers.

A careful study of the whole situation indicates that the Province's position and its future, as far as power development is concerned, can be adequately protected without encountering the Province at this time in extensive capital expenditure with probable danger of financial overstretching.

On the other hand certain conditions are necessary for the protection of the interests of rural Manitoba, assuming that it is decided not to proceed with the development of the River flows into its power system. These conditions are an adequate supply of power for a long period of years, while the Manitoba Hydro Commission is building up its load and expanding the lines, and also assurance that the plant as constructed at the River flows site by private enterprise can be reacquired by the Province when and if the Province desires to take it over in the public interest.

As a partial consideration for the Province withdrawing its application for the site the Company should be asked to sign a contract with the Province to furnish power to Winnipeg at the Manitoba Power Commission's transmission line terminals. This contract would extend for the period of the term or for a term of at least twenty five years, and would cover the delivery of all power necessary for the operation of the Commission's system.

As there is every likelihood of the success of the several resolutions being tabled over to the Province in the course of a very few weeks it is probable that the Federal Government would be prepared to accept in any lease granted to the Company such clauses as the Province may desire.

A further consideration and a protection of the future of the Manitoba Power Commission's power supply would be the insertion of such reciprocal clauses in the lease between the Federal Government and the Company as would allow the Provincial Government, at the Federal Government's liking at its discretion to take over such development as the Company may construct at

the Seven Sisters site at the end of the first period of the loan or at any time of renewal thereof. It is quite possible to draft these clauses so that the position of the Province is safeguarded, and also sufficiently protective of the Company so that their position would not be prejudiced in the future financing necessary for the development.

CONCLUSION

In concluding, I find that, much as I would like to recommend the development of the Seven Sisters reach as a public ownership scheme such a procedure is economically unsound, in view of the present power situation and the growth to be anticipated in the future. I would emphasize that I do not believe the Province would be justified on economic grounds, in proceeding as a public undertaking with this development, under the peculiar conditions obtaining in this reach of the river.

It is my studied opinion that, if the Province can secure for distribution by its Commission an adequate supply of power say up to 30,000 horsepower for a long term, at a price which compares favourably with what it would be possible to obtain by the construction of a Provincially-owned development, and assuming a load available for the full capacity of such development, this method of procedure would be much more advantageous and desirable.

Contracts for the supply of power have recently been entered into by the Hydro-Electric Power Commission of Ontario, and these contracts give a basis to enable a determination of what this price should approximate.

The price paid in one of these contracts for a block of 250,000 horsepower, at the generating plant at high tension transmission voltage is \$15 per horsepower. On a second contract, which is perhaps the most favourable obtained throughout Canada in recent years, the price is \$14.75 per horsepower delivered, at high tension transmission voltage, directly from the generating plant in blocks of 5,000 horsepower per year for ten years, and up to a total of 100,000 horsepower.

The prices for power under these contracts is very favourable indeed, and they offer a criterion of what the Province should obtain. If the Province can make a contract for a block of 30,000 horsepower delivered at the terminals of their substation in Winnipeg at prices comparable with the above, such a contract would prove the best solution to the problem confronting the Government. If a lower price than those mentioned in the above contracts can be secured, then by so much is the interest and position of the Province, in regard to its supply of power improved.

Respectfully submitted,

T. R. BOGG,

Consulting Engineer

York Mills, Ontario,
March 1938, 1938.

AGREEMENT
WITH WINNIPEG ELECTRIC

Agreement between Manitoba Government and Winnipeg Electric Company

THIS AGREEMENT made in triplicate this 25th day of April, A.D. 1928.

BETWEEN

HIS MAJESTY THE KING in the Right of the Province of Manitoba herein represented by the Honourable the Minister of Public Works of the Province of Manitoba, (hereinafter called the "Minister")

Of the First Part,

~~NORTH WESTERN POWER DEVELOPMENT COMPANY~~

(hereinafter called the "Power Company")

Of the Second Part,

—and—

WINNIPEG ELECTRIC COMPANY,

Of the Third Part.

WHEREAS, the Government of Manitoba in the year 1915 applied to the Government of the Dominion of Canada, hereinafter called "the Dominion Government" for a lease of and the right to develop under "The Dominion Water Power Act" and the regulations made thereunder the power sites and the water powers upon the Winnipeg River in the Province of Manitoba, known as "SEVEN SISTERS FALLS" and Winnipeg Electric Company also made application to the said Dominion Government for the same lease and the same right

AND WHEREAS, if the Power Company will execute this Agreement and if the Power Company secure from the Dominion Government at Ottawa the lease of and the right to develop said Seven Sisters Falls as hereinafter set forth, the Minister and the Winnipeg Electric Company are each willing to withdraw their said respective applications

AND WHEREAS, the Power Company as part of the consideration for the said withdrawal by the Minister is willing to enter into this Agreement and to supply power to the Minister on the terms and conditions herein contained for the electrical system of the Minister hereinafter called the "Electrical System",

AND WHEREAS, Winnipeg Electric Company, as the owner of the power development plant on the said river known as Pinawa, is also interested in the said withdrawal by the Minister and is willing to guarantee due performance of this Agreement by the Power Company and is also willing to withdraw its said application on the terms herein set out,

Now, THEREFORE, THE ABovesaid WITNESSETH that for the considerations herein contained the parties hereto covenant, promise and agree as follows

1 The Power Company shall forthwith secure from the said Dominion Government the lease of and the right to develop the said power sites and water powers known as Seven Sisters Falls aforesaid and shall forthwith proceed to

develop power at the said sites and thereafter shall continue with the development of power at the said sites as the demands of the community require, and in order to fulfill the requirements of this Agreement and as may be directed from time to time by the Minister until the total maximum power of the said river at said sites is fully developed, and for such purpose shall divert water when and as necessary from the Pinawa channel to the main channel of the said river so as to secure the maximum development of the said Seven Sisters Falls power site, and will thereafter discontinue the use of Pinawa plant for the hydro electric generation of power and the Power Company will construct and operate such control dams and works as shall be necessary to restore the said water to the main reach of the river and over the Seven Sisters Falls,

1. The Power Company agrees

(a) to reserve for the Minister thirty thousand horsepower (30,000 H.P.) of electrical power and to deliver to the Minister electrical power in the amount required by the Minister from time to time up to the said thirty thousand horsepower (30,000 H.P.) upon the terms herein contained, and at the point of delivery herein specified commencing on a day to be named by the Minister and if no day is named by him then when power is first delivered from Seven Sisters Falls, that is, when the power development at Seven Sisters Falls first delivers power on commercial load, whichever of said dates is the earlier, and thereafter continuing while this Agreement remains in force

provided, that if at any time the Minister requires a block of five hundred horsepower (500 H.P.) in excess of the greatest amount of power previously delivered to the Minister the Power Company shall not be obliged to deliver the same until three (3) months after notice thereof in writing from the Minister. In case the Minister requires a block of more than five hundred horsepower (500 H.P.) and not exceeding one thousand horsepower (1,000 H.P.) he shall give six (6) months notice in writing thereof to the Company, and in case he shall require a block of over one thousand horsepower (1,000 H.P.) at any time nine (9) months notice in writing will be required.

2. (b) to use at all times first-class, modern, standard, commercial apparatus and plant and to exercise all due skill and diligence so that the service rendered to the Minister shall be in accordance with the best commercial standards.

3. (c) to deliver commercially continuous twenty-four (24) hour power every day in the year, except as provided for herein, at the point of delivery which shall be

- (i) at or near the point in the City of Winnipeg where the Minister is now taking delivery of power;
- (ii) at a point in or near the City of Winnipeg where the Minister and the Company may agree, or
- (iii) at such other point or points as the Minister and Company may

agree.

4. (d) to deliver power which shall be alternating, three phase having a periodicity of approximately sixty (60) cycles per second and a pressure of approximately thirty-three thousand (33,000) volts between phase wires, or such higher voltage as the Minister may require from time to time, subject to normal variations in voltage and frequency of approximately five per cent (5%) provided that if the Minister requires a voltage higher than thirty-three thousand (33,000) volts the Power Company shall not be obliged to change the voltage to that required by the Minister until the expiry of six months' notice in writing

from the Minister provided, further that for the purpose of this Agreement the word "power" means the current requires a different meaning, that mean also and include energy, and one horsepower (1 H.P.) shall be equivalent to seven hundred and forty-six (746) watts.

3. The Minister agrees

(a) to pay to the Power Company for all power delivered to the Minister in monthly payments in lawful money of Canada, at Winnipeg at the following schedule of rates based on the maximum twenty (20) minute integrated demand, namely

at a rate which shall not be more than the rate of Thirteen Dollars and Eighty Cents (\$13.80) per horsepower per annum, nor less than the rate of Eleven Dollars (\$11.00) per horsepower per annum and within these limits at the rate of One-Half Cent (½¢) per kilowatt hour each month's payment, to be made as though the maximum twenty (20) minute integrated demand taken during the month were taken for the whole month provided, that the price to be paid for power according to the said schedule of rates shall include all water rentals payable under the lease of Seven Sisters Falls, whether by the Power Company the Winnipeg Electric Company or otherwise provided further that if additional charges for water rentals in excess of those charged under the said lease be imposed by the Dominion or Manitoba Government and the cost of power be thereby increased to the Company the Minister shall pay to the Power Company such additional amount each month as shall exactly compensate the Power Company for the said increase in cost of power in respect of the power delivered to the Minister

Provided that the Minister shall not be required to pay in any month for more power than the power actually delivered to the Minister as measured and on the basis set out in this clause (3a) and provided further the Minister shall not be obliged to take the power covered by this Agreement, or any part thereof, if the Minister so desires.

3 (b) to give to the Power Company three months' notice in writing of any increase on load in excess of five hundred horsepower (500 H.P.)

3 (c) at all times to take and use the power in such manner that the current will be equally taken from the three phases and in no case shall the difference between any two phases be greater than five per cent (5%). If the difference be greater than five per cent (5%) the Minister upon request from the Power Company shall so adjust the Minister's load as to comply with this requirement.

3 (d) to pay to the Power Company on bills rendered by the Power Company within fifteen (15) days after receipt of such bills.

3 (e) to use at all times modern, standard, commercial apparatus and plant and to exercise all due skill and diligence so as to secure the satisfactory operation of the apparatus and plant of both the Power Company and the Minister.

3 (f) to use the power delivered under this Agreement solely for the electrical system of the Minister and not to sell, distribute or dispose of any such power as may be delivered under this Agreement in the cities of Winnipeg and St. Boniface and the territory outside said Cities now served by the Winnipeg Electric Company or its subsidiary companies

4 (a) Measurement of the power delivered to the Minister hereunder shall be made by means of suitable polyphase recording meters provided by the Power Company and so arranged as to accurately measure and record the said power.

The greatest average or integrated power demand made by the Minister for any twenty (20) consecutive minutes in any month, as shown by the above-mentioned instruments, shall be used as a basis for billing and paying for the power delivered to the Minister during said month.

4. b. The point of measuring the power covered by this Agreement shall be at the switchboard in the substation at the point of delivery and the instruments, with the necessary current and potential transformers for the measurement of power hereunder shall be provided, installed and maintained consistently correct by the Power Company.

Records from said meters shall be on file with the Power Company and shall be available to the Minister for inspection at all reasonable times.

4. (c). Whenever the said measuring instruments are connected at other than the point of delivery their readings shall be subject to a correction and shall be corrected to give results such as would be obtained by instruments connected at the said point of delivery, such corrections shall be based upon tests or calculations agreed upon by the Power Company and the Minister.

4. (d). Should the measuring instruments be located on the premises of the Minister the Minister shall provide free of charge a safe and suitable location, to be approved by the Power Company for the installation of the Power Company's instruments and transformers and other measuring equipment and no change of other charge or claim shall be made to the Power Company for the location of said measuring equipment on the premises of the Minister.

4. (e). Access to said measuring equipment belonging to the Power Company shall be free to the Power Company at any and all times and the Power Company may test, calibrate, adjust, remove or change said measuring equipment at any reasonable time but when possible the Minister shall be advised at least three (3) days in advance of the Power Company's intention to test, calibrate, adjust, remove or change the said measuring equipment.

4. (f). The Minister shall have the right to test any such measuring equipment in the presence of a representative of the Power Company by giving to the Power Company three (3) days previous notice in writing of the Minister's desire to test such measuring equipment.

4. (g). The Power Company shall repair or replace and reset defective meters or measuring equipment within a reasonable time but during the time there is no meter in service it shall be assumed that the power delivered is the same as for other days of the same month on which a similar load existed.

4. h. Access to lines, apparatus and equipment belonging to the Power Company and on the premises of the Minister shall be free to the representatives of the Power Company at any and all times for the purpose of inspection, operation, test, adjustment, repair, alteration, reconstruction and so forth.

4. i. The maintenance by the Power Company of approximately the agreed voltage at approximately the agreed frequency for the amount of power required from time to time by the Minister at the point of delivery shall constitute delivery of power under this Agreement.

4. j. In case the Power Company shall at any time or times be prevented from delivering said power or any part thereof by either lockout, riot, fire, invasion, explosion, act of God, the King's command or any other cause or causes reasonably beyond the Power Company's control then the Power Company shall not be bound to deliver such power during such time and the Minister shall not be bound to pay for such power during such time. The Company further agrees that during the existence of such interruption or condition it shall furnish

to the Minister electrical energy pre rata with its other customers, giving, however, priority to power required to operate the street railway systems of the party of the third part, for light and power for hospitals and other public uses of a similar character;

3 c The Power Company shall be prompt and diligent in restoring the power of each interruption, and as soon as the cause of such interruption is removed the Power Company shall, without any delay, deliver the said power and the Minister shall take and pay for said power all in accordance with this Agreement.

4 d The Power Company shall have the right at reasonable times and when possible after reasonable notice has been given to the Minister to discontinue the supply of power to the Minister for the purpose of safeguarding life or property or for the purpose of making repairs, repairs or replacements to the lines apparatus or equipment of the Commission, but all such interruptions shall be of a minimum duration and when possible arranged for at a time least objectionable to the Minister.

Such interruptions shall not release the Minister from any obligation to take and pay for power when service is restored.

4 One or more representatives or engineers of the Power Company appointed for this purpose may at any reasonable time during the continuance of this Agreement have access to the premises of the Minister for the purpose of inspecting the electrical apparatus, plant and property of the Minister and of taking records herefrom as required.

7 In case of any dispute arising between the parties hereto relative to the fulfillment of any of the terms, provisions or conditions of this Agreement, or as to the method or accuracy of the measurement of power or any other question which may arise under this Agreement, the same shall be immediately referred to arbitration under "The Arbitration Act" of the Province of Manitoba.

8 This Agreement shall be binding upon the parties hereto upon its execution and shall continue in force for a period of thirty (30) years from the date named by the Minister or if no day is named by him when the power is first delivered from Seven Sisters Falls that is when the development of Seven Sisters Falls first goes into operation on commercial basis, of which date notice in writing shall immediately thereafter be given by the Power Company to the Minister.

9 The Power Company shall be entitled at any time prior to the expiration of thirty (30) days notice in writing from the Minister delivered after the termination of this Agreement and the last execution thereof to remove from the premises of the Minister any and all lines apparatus and equipment which may have been installed by the Power Company for the supply or measurement of power hereunder.

10 If while this Agreement remains in force the Minister request the Power Company to deliver power in excess of thirty thousand (20,000) horsepower the Power Company shall deliver to the Minister within three (3) months from receipt of such request the additional power so required by the Minister and the Minister shall pay the Power Company for all such additional power at a price which shall be agreed upon between the Minister and the Power Company or upon failure to agree at a price which shall be fixed by the Municipal and Public Utilities Board of the Province of Manitoba or any successors of such Board or if said Board or any successors thereof be not in existence or be unable or unwilling to fix the said price then at a price which shall be fixed by arbitration under "The Arbitration Act" of Manitoba.

11 The Minister upon twelve (12) months prior notice in writing may at the expiration of the said period of thirty (30) years, based on the term of this contract take over from the Power Company the license and water power lease at Seven Sisters Falls together with all rights, powers, privileges, benefits and advantages in connection therewith and all the works, lands and properties of the Power Company at the said Seven Sisters Falls used by it for the production of electrical power thereat.

Such taking over by the Minister shall be in accordance with the terms of the lease the Dominion Water Power Regulations and the Dominion Water Power Act. The Minister shall pay to the Power Company as full compensation for a.) property rights powers privileges benefits and advantages taken over compensation which shall be determined in accordance with the terms of the lease the said Regulations and the said Act in the event of such taking over by the Minister on behalf of the Province it is agreed that all the conditions of the lease from the Federal Government to the Power Company and all rights as they exist under the Dominion Water Power Regulations or under the Dominion Water Powers Act shall enure to the Minister for and on behalf of the Province of Manitoba.

12 If the Minister should not at the expiration of the said thirty (30) years, have taken over as aforesaid the license water power lease rights, powers, privileges works and property at Seven Sisters Falls, the Power Company shall continue to deliver to the Minister power in accordance with the terms of this contract until the expiration of the said license and water power lease at a price to be agreed upon between the Minister and the Power Company or upon failure to agree at a price which shall be fixed by the Municipal and Public Utility Board of the Province of Manitoba or if the said Board be not in existence or be unable or unwilling to fix the said price then at a price which shall be fixed by arbitration under "The Arbitration Act" of Manitoba.

13 It is specifically requested by the Minister and agreed to by the Power Company that the Power Company shall wherever reasonably possible employ only Manitoba contractors and workmen, and use only Manitoba material and supplies in or in connection with Seven Sisters Falls development and this contract.

14 The Power Company shall stand to be built its railway line to the power site at Seven Sisters Falls either from Whitemouth or Shady and through the Whitemouth Valley and thereby serve not only the interests of the Power Company but also in greatest measure the interests of the settlers in the District.

15 This Agreement shall extend to, be binding upon and enure to the benefit of the successors and assigns of the parties hereto, and shall not be assignable by either party without the consent of the other.

16 Any waiver by the Power Company or the Minister or failure by it or him to exercise its or his rights or enforce its or his remedies shall be limited to the particular instance and shall not operate or be deemed to waive any other right or remedy or extend to any other matter under this Agreement or in any other way affect the validity of this Agreement.

17 Notwithstanding upon the execution of this Agreement by the Power Company and Winnipeg Electric Company the Minister and the Winnipeg Electric Company in accordance with the provisions of this Agreement will withdraw or secure to be withdrawn, the said respective applications of the Minister and the Winnipeg Electric Company for license and for water power lease at Seven Sisters Falls subject at all times, however to the provisions of clause 30 of this Agreement.

18. The rates to be charged by the Power Company shall be subject to and under the jurisdiction of the Municipal and Public Utility Board of the Province of Manitoba, or any successor thereof which may hereafter be appointed, and said Board shall have complete jurisdiction from time to time to fix just and reasonable rates to be charged by the said Power Company under the provisions of the Municipal and Public Utility Board Act of the Province of Manitoba, or any amendments thereto.

19. The Winnipeg Electric Company hereby guarantees complete performance by the Power Company of all its obligations under this Agreement, and upon any default by the Power Company, Winnipeg Electric Company shall make good the default, or shall itself perform this Agreement.

20. In the event of the Power Company not securing from the said Dominion Government the right to develop said Seven Sisters Falls sites as aforesaid this Agreement shall be at an end and the rights of the parties to this Agreement shall be the same as though this Agreement had not been executed.

21. In executing this Agreement the parties to the same realize that while same is in force the natural resources in Manitoba which include all the water powers and water power rights in Manitoba may be transferred to the ownership of Manitoba, and the parties to this Agreement therefore execute the same with the knowledge that when the said natural resources are transferred to the ownership of Manitoba the Province will be entitled to all rights and powers, whether statutory or otherwise, now existing of the Dominion Government in relation to said water powers, including the right of expropriation.

22. In executing this Agreement the Minister makes no admissions, either express or implied, as to the present lawful ownership of the natural resources in Manitoba.

In WITNESS WHEREOF the Minister has caused this Agreement to be executed under his signature and seal of office, and the Power Company and Winnipeg Electric Company have caused this Agreement to be executed attested by the fixing of their corporate seals and the signature of their proper officers duly authorized thereto.

SIGNED, SEALED AND DELIVERED
in the presence of

APPROVED:

E. Anderson, Counsel

THE NORTH WESTERN POWER CO. LIMITED

A. W. McLiment, President
Lawrence Park, Secretary

WINNIPEG ELECTRIC COMPANY,

A. W. McLiment, President
Lawrence Park, Secretary

W. R. Clubb, Minister of Public Works

